DEPARTMENT OF THE ARMY
HEADQUARTERS, UNITED STATES ARMY DENTAL COMMAND
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SAFETY
HAZARD COMMUNICATION PROGRAM

1. PURPOSE. This Hazard Communication Program establishes the responsibilities and procedures for identification, labeling, and training in the routine and non-routine use and management of hazardous chemicals in the workplace in accordance with the Occupational, Safety and Health Administration (OSHA) Hazard Communication Standard (HCS), Title 29, Code of Federal Regulations, Part 1910.1200.

2. GOAL. This written program and its comprehensive application is intended to promote the safe use and handling of hazardous chemicals in the dental facility workplace.

3. SCOPE. The Hazard Communication Program applies to all organizations and personnel (to include active duty, Reserve, Civil Service, and contract personnel) assigned to or working at U.S. Army Dental Facilities.

4. REFERENCES.

a. AR 420-47, Solid and Hazardous Waste Management.

b. Department of Defense Federal Hazard Communication Training Program, April 1988.

c. DOD 6050.5-H, June 1989, Department of Defense Hazardous Chemical Warning Labeling System.

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* This pamphlet supercedes DENCOM Pam 385-1-1,12 December 1994 and any updates

d. Section 1200, Part 1910, Title 29, Code of Federal Regulations, (29 CFR 1910.1200),Occupational, Safety and Health Administration Hazard Communication Standard.*†

e. OSHA Instruction CPL 2-2.38C, November 19, 1990, Inspection Procedures for the Hazard Communication Standard.*

f. OSHA Compliance Program, Health Career Learning Systems, Inc. (HCLS), April 1992.

g. United States Army Dental Corps Pamphlet 40-5-1, Exposure Control Plan/Infection Control, 1 July 1995.

h. HSC Regulation 40-35, 27 Dec 93, Management of Regulated Medical Waste (RMW).*

i. HSC Regulation No. 385-1, 1 Jun 93, Hazard Communication (HAZCOM) Program.*

j. HSC Supply Management Bulletin No. 1-93, 31 Aug 1993,Hazardous Material Policies and Procedures, *

k. Healthcare Hazards, Compliance and Guidelines, J.J. Keller and Associates, Inc., Neenah, WI, 1993.

l. Fundamentals of Industrial Hygiene, third edition, 1988, National Safety Council.

m. American Dental Association compliance manual, American Dental Association.

n. Hazardous Materials Toxicology -- Clinical Principles of Environmental Health, 1992, Williams & Wilkins.

5. ORGANIZATION. This document provides an overview of the requirements of the Hazard Communication (HAZCOM) Standard in a manner specifically applicable to dentistry. Five key elements of this program are:

a. Hazardous Chemical Inventory.

* Required in Dental Unit Files
† Required reading and/or briefing for all Dental Health Care Workers

b. Material Safety Data Sheet (MSDS) files.

c. Hazard Warning Labels.

d. Training.

e. Documentation.

6. RESPONSIBILITIES.

a. Dental Unit Commander:

(1) The Dental Unit Commander exercises overall responsibility for the execution of the Hazard Communication Program.

(2) Appoints the Dental Unit HAZCOM/Safety Officer in writing.

b. The MEDICAL UNIT/DENTAL UNIT Safety Manager:

(1) Administratively oversees the Medical and Dental Unit Hazard Communication Programs, ensuring that it fulfills the requirements of 29 CFR 1910.1200 (OSHA Hazard Communication Standard) and HSC Regulation 385-1.

(2) Advises the Dental Unit Commander of changes to the OSHA Hazard Communication Standard and other local, state, federal or DOD regulations.

(3) May provide support in the form of training and information regarding universal aspects of hazard communication upon initial employee assignment as well as annual refresher course.

(4) Monitors compliance through administrative and on site inspections.

(5) Liaison with the Defense Reutilization Management Organization (DRMO) to coordinate disposal of chemical hazardous waste.

c. The Dental Unit HAZCOM/Safety Officer:

(1) Serves as Dental Unit program coordinator, ensuring that all aspects of the program are universally implemented among dental facilities.

(2) Compiles and maintains a comprehensive reference of Material Safety Data Sheets and a corresponding hazardous chemicals inventory (Master List/File).

(3) Coordinates training and information.

(4) Monitors compliance through administrative and on site inspections (e.g. Command Inspection Program).

(5) Reviews the Hazard Communication Program at least annually and revises the document as necessary to reflect current regulatory practices.

(6) Ensures that annual surveys, monitoring, advice and help of the Preventive Medicine Service (PMS), Industrial Hygiene (IH) and the Department of Public Works (DPW) is coordinated as required.

(7) Coordinates quarterly meetings with dental unit personnel involved with compliance with HAZCOM regulatory requirements.

(8) Coordinates a consistent labeling system throughout the dental unit IAW directives of this document. (See Appendix E).

(9) Ensures that this written program, the clinic file of Material Safety Data Sheets (MSDSs), and the clinic Hazardous Chemical Inventory are centrally located and readily accessible to all employees at all times and consistent with the Dental Unit master files.

(10) Ensures posting of all OSHA required information at outlying clinics for all employees to read. (See Appendix C)

(11) Coordinates and ensures proper documentation of training of all personnel working in the unit. Continually monitors and provides appropriate training as required when new chemical products are introduced.

(12) Directs implementation of all applicable aspects of the program at clinic level, to include timely and continual management of MSDSs, the chemical hazard list and labeling compliance through appropriate clinic level personnel.

(13) Delegates responsibilities in writing to key resource personnel (Officers, NCOs, or civilians) to ensure all listed tasks are accomplished.

(14) Reviews health and safety data on MSDSs for all current and newly acquired chemical products to determine special requirements for handling, storage and/or disposal. Coordinates employee training to employees for new chemicals and/or changes in handling requirements when appropriate.

(15) Ensures that all employees (military and civilian) are provided job-related medical surveillance examinations by the local Preventive Medicine or Industrial Hygiene Service as required annually and following any potentially hazardous exposure or other potentially hazardous incident.

d. Clinic Officer in Charge:

(1) Ensures compliance at the clinic level of all aspects of the HAZCOM Program

(2) Appoints a clinic HAZCOM/Safety Officer/NCO.

e. Clinic HAZCOM/Safety Officer/NCO:

(1) Reviews the Dental Unit Hazard Communication Program annually.

(2) Initiates investigations of all reported accidents, ensures proper documentation (OSHA 200 Form) of reportable accidents with appropriate liaison. (29 CFR 1904.1-5 Recording and Reporting Occupational Injuries and Illnesses). See Appendix C.

(3) Ensures proper annual posting of OSHA 200 Form Summary IAW 29 CFR 1904.5 (Recording and Reporting Occupational Injuries and Illnesses). (See Appendix C.)

(4) Reviews plans and specifications for all facility construction or renovation to ensure appropriate design criteria are incorporated.

(5) Ensures that all non-assigned workers (such as outside contractors) working in the dental facility are provided information (oral and/or written, e.g., MSDSs) about the chemical hazards in the work area prior to initiating any work. Vendors and delivery personnel are also included. Ensures that visiting workers obey their OSHA responsibilities by obtaining from them pertinent information regarding any potential chemical hazard brought into a dental facility (e.g., painters bringing in paint, solvents, etc.) to ensure that no dental unit employee is inappropriately exposed to any hazardous materials or chemicals.

(6) Ensures appropriate personal protective equipment (PPE) is available for all employees, and provide training for its proper use.

(7) Ensures adequate engineering controls within the facility, and seeks the monitoring (e.g., air sampling), advice and help of the Preventive Medicine Service, Industrial Hygiene and the Department of Public Works (DPW) as required (e.g., when employee exposures are suspected, etc.).

(8) Conducts periodic inspections of the dental facility

f. Dental Unit Supply Officer and/or Supply NCO:

(1) Ensures that each chemical item ordered, stocked or in use has a corresponding MSDS on file in the master MSDS library, that all such chemical items are also included on the master Hazardous Chemical Inventory and that labeling requirements are met prior to distributing that item for use. Compares the publication date of all MSDSs to the master file MSDS copy to ensure the newest information is available. Replaces outdated MSDSs and forwards the new MSDS to the clinic(s) using that item.

(2) When ordering supplies new to the unit (previously unordered), procures copies of all appropriate MSDSs from another source within the Dental Unit or requests the MSDS from the respective manufacturers. Documents this request in writing.

Supplies the new MSDS to appropriate clinics and adds to the master file of MSDSs and adds chemical to Hazardous Chemical Inventory Data Base.

g. Clinic supply personnel:

(1) Will maintain appropriate levels of PPE required for chemical agents used in the clinic.

(2) Ensure compliance with secondary labeling requirements (See Appendix E).

(3) Do not distribute hazardous materials unless the MSDS is on file and the chemical inventory has been updated.

h. All individuals (military and civilian):

(1) Comply with all regulations, policies, and guidance when working with or in the vicinity of hazardous chemicals/ materials.

(2) Properly use and maintain protective clothing and equipment while working with hazardous chemicals/materials,

(3) Warn others, and if necessary, take appropriate action to prevent improper use of, or exposure to, hazardous chemicals/materials. The cooperative protection of all employees and their co-workers is paramount, and non-compliance cannot be tolerated.

(4) Report hazardous conditions, exposures or abnormal circumstances associated with an operation to their supervisor.

(5) Ensures all complimentary or sample products used in the dental facility have the appropriate MSDS on file and that hazardous chemicals are added to the master chemical inventory list.

(6) Receipt of MSDSs by individuals as package inserts should be forwarded to the clinic HAZCOM/Safety officer for proper handling.

7. POLICY.

a. All personnel will be provided information about the hazardous chemicals to which they are exposed, safe handling procedures, and measures to take for personal protection during routine as well as non-routine tasks. This will be accomplished by means of a hazard communication program, labels and other forms of warning, Material Safety Data Sheets, information and training, and self study by the employee.

(1) Routine tasks are those tasks performed daily, weekly or monthly and consistently by the same individual(s). Routinely or regularly performed tasks done by individuals on a rotating basis (i.e., done infrequently by any single individual) are considered non-routine tasks.

(2) Non-routine tasks are those tasks performed less frequently than monthly, infrequently or irregularly. Supervisors must provide briefing (training) for the task, appropriate PPE and training for its proper use, and followup inspection to ensure the task is being performed safely. The management of spills, fires, and other chemical hazard emergencies are also considered non-routine tasks, for which training must be provided in advance of any such occurrence.

b. The quantity of hazardous chemicals/materials stocked by the user will not exceed the minimum necessary to satisfy operational requirements. Less hazardous or non-hazardous chemicals/materials will be used when they are technically acceptable to accomplish the task. If less hazardous materials are found acceptable for a task, that information should be made available to the Dental Unit HAZCOM/Safety Officer or Dental Unit Material Standardization Committee.

c. Products containing hazardous chemicals/materials will not be used under the following circumstances, unless authorized in writing by the MEDICAL UNIT/DENTAL UNIT Safety Manager and/or the Dental Unit HAZCOM/Safety Officer:

(1) The MSDS for a product is not on file at the dental clinic in which the chemical product is going to be used (supply personnel will not distribute the product until the required MSDS is procured and filed in the clinic and master MSDS files).

(2) Required protective clothing and/or equipment are

not available.

d. Acutely toxic compounds, carcinogens and reproductive toxins shall be handled using the special procedures found in HSC Regulation 385-1 and HSC Supply Bulletin No. 1-93.

8. RIGHTS OF EMPLOYEES.

a. This Hazard Communication Program and list of hazardous chemicals will be available and readily accessible to all employees at any time during the work day.

b. Employees may, and are encouraged to, point out possible deficiencies in the implemented Hazard Communication Program. Any aspect may be addressed, especially regarding training and information dispersal.

c. Employees have ready access to occupational health monitoring, counseling, and medical records review through the Preventive Medicine Service/Occupational Health Service.

9. HAZARDOUS CHEMICAL INVENTORY. The Hazardous Chemical Inventory is the first part of the triad of specific chemical agent identification and information sources. It serves as a quick reference to see if a particular chemical agent exists within the clinic and whether or not a Material Safety Data Sheet for that chemical agent is currently on file as required. The inventory must be filed with the written program and MSDS file. Specific guidance on Format of the Hazardous Chemical Inventory can be found at Appendix D.

a. For each chemical agent, the inventory will list (at a minimum) the product name (a.k.a. trade name, common name, commercial name), manufacturer, and whether or not an MSDS is currently on file. Identical products made by different manufacturers must be listed individually as separate products and have respectively separate MSDSs.

b. The name of the chemical agent (product name, trade name, common name, commercial name) used on the inventory must be identical to the name on <u>both</u> the MSDS and any warning label.

c. When the inventory indicates that an MSDS is not on file, the inventory will be annotated with the date that the

missing MSDS was requested. When the requested MSDS is received and filed, the inventory line for that chemical product is updated.

d. When the inventory indicates that an MSDS is not on file, the responsible supply personnel will not distribute or further distribute the respective chemical agent until the required MSDS is obtained. The Clinic HAZCOM/Safety Officer/NCO will review the new MSDS to determine the need for additional training.

e. Clinic inventories will be updated as new items are received and reviewed periodically (at least annually) to ensure they are entirely complete and correct. Corrected copies will then be forwarded to the Dental Unit HAZCOM/Safety Officer for updating the Dental Unit Master Hazardous Chemical Inventory.

10. MATERIAL SAFETY DATA SHEET (MSDS). The MSDS is the second part of the triad of specific chemical agent identification and information. All employees should review in detail the MSDS for each chemical they use during work.

a. Obtaining MSDSs.

(1) Dental Unit Supply personnel will have the primary responsibility for obtaining MSDSs.

(2) MSDSs may be obtained from:

(a) Manufacturer.

(b) Dental Unit HAZCOM/Safety Officer.

(c) MEDICAL UNIT/DENTAL UNIT Safety Manager.

(d) Other Dental Clinics.

(e) MEDDAC Supply/Warehouse

(3) Two (2) copies of any new MSDS received will be forwarded to the Dental Unit HAZCOM/Safety Officer for update of the master MSDS file and Hazardous Chemical Inventory. In addition to updating the clinic MSDS file, the Clinic Hazardous Chemical Inventory will also be updated, and any new labeling

requirements will be observed.

b. Maintaining MSDSs.

(1) MSDSs will be maintained at clinic level for all chemicals used in that clinic by the Clinic HAZCOM/Safety Officer/NCO. A comprehensive master file of MSDSs from all clinics will be maintained by the Dental Unit HAZCOM/Safety Officer and be kept at a location known to all personnel. Clinics will provide two (2) copies of any new MSDS to the Dental Unit HAZCOM/Safety Officer when appropriate. (e.g., when a new item is ordered and introduced into the clinic)

(2) MSDSs will be maintained on file for the entire period a chemical product is used plus an additional thirty (30) years.

(3) MSDSs will be maintained in notebooks and centrally located so that they are readily accessible to all employees. At no time will these be locked in a room or by any other means made inaccessible. Recommended storage systems would include notebook racks, wall mounted, near the common break area or other area where employees can use the references easily.

(4) MSDS notebooks will contain the chemical inventory organized alphabetically by the common or trade name used on the label and the MSDS. The chemical inventory will direct the employee to the proper notebook and MSDS. The MSDS should also be filed alphabetically by the same name on the chemical inventory. The MSDS book should be divided by tabbed indicators to speed locating the MSDS.

(5) The exact name of the chemical agent (product name, trade name, common name, commercial name) listed on the MSDS **must** be the one used for the Hazardous Chemical Inventory and secondary warning label; the product identification for any item must be identical on all three of these documents. The most common use name will facilitate finding the proper information if needed from the chemical inventory and MSDS library. Highlighting the name or identity on the MSDS is recommended to make locating the proper name easier for employees using the MSDS file.

c. Updating MSDSs.

(1) An unsolicited MSDS receipt (e.g., when one is packaged along with a received supply item) may very well be an updated or revised data sheet from the manufacturer of the product. Supply personnel review this MSDS for possible inclusion in the master MSDS library. Some MSDSs have on it the date that it was prepared. If it is a new revision, it will be annotated as an update and with the date received. This new MSDS will be placed and stapled on top of the old MSDS; the old MSDS will be annotated as outdated. As with any new MSDS, copies will be forwarded to the Dental Unit HAZCOM/Safety Officer.

(2) When a MSDS is suspected of containing erroneous information, this concern will be detailed in a memo and, with a copy of the questionable MSDS, forwarded to the Dental Unit HAZCOM/Safety Officer. He will seek assistance from the MEDICAL UNIT/DENTAL UNIT Safety Manager in contacting the respective manufacturer and obtaining a corrected/updated MSDS.

(3) When an MSDS is updated, the warning labels on all secondary containers for that respective chemical agent must be reviewed to ensure the information on the labels is still accurate and valid. Any label that does not accurately reflect the information on the new MSDS must be replaced with a new label that does contain the new and accurate information.

(4) The review of a new MSDS may reveal the need to provide training to ensure all employees are aware of any significantly new or different use or handling recommendations for the chemical product.

d. Retiring MSDSs. Chemical products that no longer exist (and not expected to be ordered again) in the clinic will be deleted from the inventory. The corresponding MSDSs of these chemicals products are removed from the main MSDS file and filed into a separate notebook entitled "Retired MSDS." The date that the MSDS is retired is annotated on the MSDS and will be retained in this "Retired MSDS" notebook for another thirty (30) years.

11. HAZARD WARNING LABEL.

a. Labels, and other forms of warning are the third part of the triad of specific chemical identification and information. The warning label on the chemical agent container provides an immediate warning to employees of potential chemical hazards. See

Appendix E for specific labeling guidance.

b. Pipes containing a gas do not require labeling to meet OSHA standards, but the chemical hazards of a gas in any unlabeled pipes will be provided to employees during training. Appropriate MSDS for the gas will be available. Pipe labeling is required under some circumstances by Department of Defense regulations.

c. Additional labeling requirements apply to hazardous chemicals and materials being transported. Transportation of hazardous chemical waste is covered in HSC Regulation 385-1, HSC Supply Management Bulletin No. 1-93, United States Army Environmental Hygiene Agency (USAEHA) Booklet "Transportation of Hazardous Materials, CFR 49, federal, state, and local guidelines. Contact your local PMS and DRMO for details.

12. INFORMATION AND TRAINING. All employees will be given information and training about hazardous communication at the time of their initial assignment within the Dental Unit and whenever a new hazard is introduced into their workplace. Employee attendance to all training sessions will be documented.

a. Initial training can be provided via the Department of Defense Federal Hazard Communication Training Program, however, another more dental oriented approved training course is recommended as a substitute for this course. Medical/Dental oriented training materials are available from the United States Army Center for Health Promotion and Preventive Medicine (USACHPPM), formerly the United States Army Environmental Health Agency.

b. Initial training at the clinic level will be directed towards employee familiarization of this Hazard Communication Program, clinic specific protocol and policies, and a walk through overview of the clinic noting specific hazards and safety concerns. Other training at the clinic level will consist of classroom instruction that includes active employee participation, audiovisual information, printed informational handouts, demonstration and/or "hands on" training of equipment and procedures. Locating MSDS information will be conducted as a "hands on" training class. Training will provide a clinic specific orientation, detailed information and specific

precautions relating to the particular hazards and work environment of an employee's assigned clinic. It will be provided at least annually and as required to address both existing and newly introduced chemical hazard concerns.

c. Information and training requested by individual employees at any time will be addressed by the Clinic HAZCOM/Safety Officer/NCO or by the most appropriate person to accurately provide it in a timely manner.

d. New employees are not required to retake the initial training program if this previous training has been documented (e.g., the DOD Federal Hazard Communication Training Program). These employees will, however, need to review all other aspects of information and training related to the Dental Unit and their respective work area. The Clinic HAZCOM/Safety Officer/NCO of a new employee's respective area will provide an orientation and explanation of specific operating procedures.

13. MANAGEMENT OF CHEMICALS is addressed in Appendix J.

14. CONTROL OF THE CHEMICAL WORK ENVIRONMENT (HAZARD CONTROL)

a. Engineering Controls. These are used to isolate the hazard from the employee or to remove the hazard from the workplace. Often times these are structural components of the physical facility, installed at the time of the facilities construction or added later. Their installation is permanent and include:

(1) Building ventilation. This includes the heating and cooling systems, with all of its various air ducts and filters. The building ventilation system is adequate enough to provide sufficient ventilation for the great majority of chemical procedures performed in the dental clinic, including most laboratory operations. The Department of Public Works (DPW) is responsible for periodic inspection and maintenance of the facility ventilation system. Should any area of the system break down, or should the Clinic OIC, Safety Officer or NCOIC suspect a deficiency (e.g., as a result of an employee concern or complaint), the DPW will be requested to inspect and correct the problem as required. In the case of a questionable deficiency, the Department of Industrial Hygiene should be requested to provide inspection, air sampling as required, and a written

report of findings with recommendations for correction if warranted to be provided to DPW to facilitate correction.

(2) Fume Hoods (Chemical Hoods). Dental laboratories usually have a fume hood that serves the toxic and flammable chemical transfer needs of the entire clinic. It is an enclosure designed to draw air inward by means of mechanical ventilation (i.e., it's own fan, turned on by a switch located on the enclosure). Laboratory fume hoods prevent toxic, flammable, or noxious vapors from entering the laboratory, present a physical barrier from chemical reactions, and serve to contain accidental spills. This type of hood should not be confused with a canopy hood, discussed below.

(a) The minimal face velocity of a fume hood should be about 100-150 feet per minute.

(b) Exhaust from the hood will be directed out of the building by a single, fully intact dedicated air duct.

(c) Sash stops will be present to prevent the sash (the vertically sliding door of the hood) from closing all the way and possibly causing a reversal in air flow. The sash will be closed to the fullest extent that the sash stops allow when not in use.

(d) Work with the hood sash closed as much as possible during operations. Do not place your head inside the hood.

(e) Minimize the storage of chemicals inside the hood.

(f) The Environmental Health section of the Department of Preventive Medicine will inspect and evaluate hood performance annually and after any repair or modification to the ventilation system. Any deficiencies found will need to be corrected in a timely manner by DPW.

(3) Canopy Hoods. While the fume hood is enclosed and has an active means of air flow (i.e., its own dedicated fan), canopy hoods located in the laboratory are unenclosed large hoods that are positioned over strategic locations along work benches. The air flow through them is sometimes passive, dependent upon

the general ventilation of the laboratory. These usually serve as the sole exhaust route of the laboratory's ventilation. For example, a canopy hood will usually be placed over the boil out area of the lab to facilitate the removal of steam and any chemical products used in that area.

(a) Due to the passive nature of canopy hood function, all laboratory doors should be kept closed to ensure proper laboratory ventilation.

(b) Canopy hoods are not designed, nor should be used, to provide entirely safe exhaust of vapors from highly toxic or flammable liquids; the fume hood serves this purpose. Use of the canopy hood should be limited to moderately low risk operations.

(c) The Department of Industrial Hygiene will inspect and evaluate hood performance annually and after any repair or modification to the ventilation system. Any deficiencies found will need to be corrected in a timely manner by DPW.

(4) Local Filtering Systems. These are usually located at each laboratory work bench and are turned on by an electrical switch that activates a fan that draws in air and the particulate matter being generated. They are intended to filter particulate matter only, e.g., the dust generated during grinding operations on a bench lathe and are not effective in filtering chemical fumes unless specifically designed for that function.

(a) If the amount of particulate matter cannot be captured and contained by the filtering system, respiratory protection will be worn, such as a face mask designed to filter dust.

(b) The filter system will be cleaned and inspected periodically, to include shaking the filters outdoors while wearing appropriate personal protective equipment (e.g., a respiratory mask designed to filter dust).

b. Personal Protective Equipment (PPE). PPE is a critical component of chemical safety protocol. All employees are obligated to use appropriate PPE when handling or using chemicals that have the potential for harming the health of the employee.

PPE will be provided by the Dental Unit and training in the proper use of the PPE will be given. Material safety data sheets (MSDSs) provide PPE recommendations in addition to other important information about a particular chemical. Use, selection, and care of PPE will meet the OSHA standards. Consult the Environmental Health Section, Department of Preventive Medicine, and/or the MEDICAL UNIT/DENTAL UNIT Safety Manager for recommendations when any doubt about proper PPE exists. This is especially true prior to any chemical spill/cleanup efforts.

c. Additional PPE. When the quantity or nature of the chemical hazard exceeds the usual controls described, other specific PPE should be worn. This PPE should be ordered from a source that specializes in providing safety equipment and supplies, and provides items that meet specifications set forth by the regulatory or advisory agencies responsible for safety recommendations:

(1) Eye protection: American National Standards Institute (ANSI), to meet or exceed the requirements of ANSI standard Z87.1-1979. Chemical goggles shall be worn during operations where a splash hazard exists or corrosives are used.

(2) Respiratory protection: Meet standards set by joint approval of the National Institute for Occupational Health (NIOSH) and Mine Safety and Health Administration (MSHA). Selection and use of respirators shall be IAW AR 11-34 and TB Med 502.

(3) Skin protection: OSHA recommendation is for a puncture-resistant glove (e.g., made of nitrile latex). Heavy-duty rubber gloves and apron are recommended when the task or quantity of chemical product indicates their use.

(4) Dental laboratory personnel shall wear closed toe shoes. The use of sandals is prohibited. Steel-toe or conductive shoes shall be worn when appropriate.

d. Eyewash Stations. Proper inspection, maintenance and use of eyewash stations is imperative. It can eliminate or greatly minimize chemical injury to the eyes. (see Appendix G)

(1) Each eyewash station will have a sign posted adjacent to it to clearly identify its location.

(2) Eyewash station design and construction will meet ANSI recommendations (Z358.1) and OSHA requirements. Emergency eyewash and shower stations in isolated, infrequently visited areas where an employee may not be with another person should have a warning horn or other such device to signal use of the device.

(3) All plumbed eyewash and emergency shower stations will be inspected and flushed with running water for at least three (3) minutes on a weekly basis. Other types of stations should be inspected according to the manufacturer's instructions. The person completing the inspection will complete a log posted near each eyewash station.

(4) All employees that may be exposed to hazardous chemicals will be trained in proper use of these stations.

e. Use of Chemicals. Caution and prudent use of chemical products can greatly reduce the potential hazards associated with them.

(1) Know what chemical product you are using before using it; check the corresponding MSDS. Use the recommended PPE. Seek advice or assistance from your supervisor in the event of any question of safe use.

(2) Comply with all container labeling requirements and read the labels to avoid accidental misuse of a chemical product.

(3) Dispense and use only the quantities needed.

(4) Handle all acutely hazardous (highly toxic and/or flammable) materials in the fume hood. Dispense and use minimal amounts.

(5) Recap all containers immediately after use; do not allow the contents of a container to needlessly evaporate. Keep lids on all equipment items that contain chemicals, such as ultrasonic cleaning machines.

(6) Ensure that you have a secure grip on all containers while handling them. Avoid using wet and/or slippery hands.

(7) Store all containers in their proper place, positioned securely on their shelf, and in secondary containment (e.g., tubs) if indicated.

(8) Upon any acute potential chemical injury, initiate proper first aid procedures immediately. Seek followup medical treatment or evaluation after hazardous chemical exposure. (See Appendix H)

(9) Report all chemical spills immediately to your supervisor. Evacuate the area and alert other personnel if the situation warrants. Do not attempt cleanup without approval, supervision, and the proper PPE and cleanup supplies. Cleanup procedures may have to be delayed until advice and/or assistance from other supporting agencies is obtained.

15. PERSONAL HYGIENE

a. Food and beverages will not be stored in any cabinet, refrigerator or other area where chemical products are intended to be stored. Food and beverages should not be consumed in areas where toxic/hazardous chemical use would make this a health hazard

b. Personnel will wash their hands after handling hazardous chemicals. Personnel will shower after unusual circumstances which result in chemical contamination to the neck, arms, legs or body.

c. Personnel will restrain long hair and loose clothing to minimize the risk of chemical contamination.

d. Mouth pipetting is prohibited.

e. Employees whom are working with hazardous chemicals in a particular worksite are prohibited from engaging in hand-to-mouth and other activities in that specific worksite. These activities include but are not limited to: smoking, eating, drinking, gum chewing, handling contact lenses, applying cosmetics, etc..

16. MEDICAL SURVEILLANCE

a. Medical examinations and consultation are performed by the Occupational Health Section, Preventive Medicine Service.

b. Proper employment and periodic job related medical surveillance will be provided to all military and civilian employees potentially exposed to hazardous chemicals (AR 40-5).

17. EMERGENCIES

a. Fires. See Unit Fire Prevention/Safety Plan.

b. Ventilation Failure in the dental laboratory.

(1) Contact the Department of Engineering and Housing and the Dept. of Industrial Hygiene. Advise them of the situation, actions being taken, and request their immediate assistance.

(a) Close the hand valve on all hazardous compressed gas cylinders.

(b) Turn off flammable gas systems to equipment and apparatuses.

(c) Close containers of volatile chemicals.

(2) Laboratory or Clinic Evacuation.

(a) Evacuate the laboratory/clinic in extreme circumstances (eg. chemical spill in conjunction with ventilation failure) or when advised by proper authorities.

(b) Personnel will not re-enter the area until the Department of Industrial Hygiene inspects the area and declares it safe for re-entry.

18. CHEMICAL SPILLS

a. General:

(1) Personnel will not attempt to clean up large spills. Evacuate the immediate area, seal off the area (close doors) if possible, restrict access and notify the Clinic HAZCOM/Safety Officer/NCO and/or supervisor.

(2) Only selected personnel who have had training in spill cleanup measures will perform chemical spill cleanup. These

personnel will be the clinic's designated "Spill Control Team". Only military personnel will be assigned to this team.

(3) Cleanup will proceed only when the exact identity, nature, associated hazards and recommended cleanup methods of a chemical are known. Appropriate personal protective equipment (PPE) and clothing must be used. Assistance from other local agencies must be immediately sought when safe and knowledgeable cleanup cannot be readily accomplished. For example, the Environmental Health Section, Preventive Medicine Service can provide procedural guidance, and the Fire Department should be called to aid in the cleanup of acutely toxic and/or flammable materials.

(4) Clinics will have on hand the supplies and equipment to handle small spills. These include absorbents, neutralizers, mops, buckets, dust pans, paper towels, sponges, and waste containers or sealed impervious plastic bags.

(5) Spill trays or other containment will be used for all complex operations where there is a reasonable probability a spill could occur.

(6) All but easily managed small chemical spills will be reported to the Environmental Health Section, Preventive Medicine Service.

b. Liquid Spills:

(1) Spills should be confined using trays, absorbents or paper towels whenever possible.

(2) Neutralize inorganic acids with an appropriate chemical or an absorbent mixture (e.g., soda ash or diatomaceous earth). Other liquids should be absorbed with nonreactive material such as sand or vermiculite and placed in suitable containers. Each clinic must have a kit designed for spill cleanup.

(3) Flammable liquids. Turn off or remove all ignition or heat sources. Continuously ventilate the area. Absorb the liquid with a nonreactive material and place in a suitable container.

c. Solid Spills: Low toxicity materials should be swept into a dust pan and placed in a suitable container. Wet methods or high efficiency particulate aerosol (HEPA)-filtered vacuum will be used to clean up toxic chemicals. Dry sweeping will be prohibited for highly toxic materials.

19. CHEMICAL WASTE DISPOSAL

a. Chemical wastes will be handled and disposed of in accordance with applicable federal, state and local environmental regulations and policies. Technical assistance in this matter will be obtained from the Environmental Health Section, Preventive Medicine Service, USACHPPM, DRMO, or local EPA offices. Chemical wastes might include spent chemicals, contaminated chemicals, spill cleanup including disposable cleanup materials, expired hazardous chemical, or any other unidentified chemical.

b. Chemicals will be handled and stored in such a way that their identity is retained from initial receipt or production to use or ultimate destruction whenever feasible. When chemicals are combined and become part of a chemical waste mixture, a record of all chemicals in the mixture will be maintained.

c. Personnel will minimize the generation of hazardous waste whenever feasible. Common methods of waste minimization include substitution of less hazardous chemicals, process changes, recycling or reuse.

d. Containers holding waste will be labeled with the contents. (The collection and turn-in of used radiographic fixer solution is an example.) Containers of hazardous waste will be labeled "HAZARDOUS WASTE" with labels specifically designed for the transport of chemical waste. Appendix J, Management of Chemicals, contains waste management guidance, a sample label, and directions for use of the label. Hazardous waste labeling and storage requirements vary greatly from state to state. Always check local regulations concerning hazardous chemical waste.

e. Only designated hazardous waste satellite accumulation sites or 90-day storage facilities will be used for the accumulation or storage of hazardous waste. The collection of any waste material at a clinic will not exceed 45 days regardless of quantity collected, and will not exceed the safe collection

and storage capacity of the clinic. When containers become "full" they must be dated and turned in to proper waste disposal agencies the same day.

f. Chemical waste will be disposed of according to existing guidance. If appropriate guidance is not available, a request for assistance will be sought from the Environmental Health Section, Preventive Medicine Service.

g. Indiscriminate disposal of chemical waste into the sewer system is prohibited.

h. The Dental Unit should be aware of the ultimate disposal method, contractor (if not military) operations, and any information needed to fulfill the "cradle to grave" concept of hazardous material handling.

20. HOUSEKEEPING

a. Chemical spills will be cleaned up immediately to minimize contamination.

b. Hazardous waste will be stored in suitable containers clearly labeled and in areas away from normal work activities.

c. Excess equipment, apparatuses and chemicals will be turned in to minimize clutter.

d. Floors will be cleaned routinely to minimize resuspension of dust and toxic contaminants. Wet methods or high-efficiency particulate aerosol (HEPA)-filtered vacuum will be used for cleaning up acutely toxic chemicals.

Appendix A
29 CFR 1910.1200 Hazard Communication.

(a) Purpose. (1) The purpose of this section is to ensure that the hazards of all chemicals produced or imported are evaluated, and that information concerning their hazards is transmitted to employers and employees. This transmittal of information is to be accomplished by means of comprehensive hazard communication programs, which are to include container labeling and other forms of warning, material safety data sheets and employee training.

(a)(2) This occupational safety and health standard is intended to address comprehensively the issue of evaluating the potential hazards of chemicals, and communicating information concerning hazards and appropriate protective measures to employees, and to preempt any legal requirements of a state, or political subdivision of a state, pertaining to the subject. Evaluating the potential hazards of chemicals, and communicating information concerning hazards and appropriate protective measures to employees, may include, for example, but is not limited to, provisions for: developing and maintaining a written hazard communication program for the workplace, including lists of hazardous chemicals present; labeling of containers of chemicals in the workplace, as well as of containers of chemicals being shipped to other workplaces; preparation and distribution of material safety data sheets to employees and downstream employers; and development and implementation of employee training programs regarding hazards of chemicals and protective measures. Under section 18 of the Act, no state or political subdivision of a state may adopt or enforce, through any court or agency, any requirement relating to the issue addressed by this Federal standard, except pursuant to a Federally-approved state plan.

(b) Scope and application. (1) This section requires chemical manufacturers or importers to assess the hazards of chemicals which they produce or import, and all employers to provide information to their employees about the hazardous chemicals to which they are exposed, by means of a hazard communication program, labels and other forms of warning, material safety data sheets, and information and training. In addition, this section requires distributors to transmit the required information to employers. (Employers who do not produce or import chemicals need only focus on those parts of this rule that deal with establishing a workplace program and communicating information to their workers. Appendix E of this section is a general guide for

such employers to help them determine their compliance obligations under the rule.)

(b)(2) This section applies to any chemical which is known to be present in the workplace in such a manner that employees may be exposed under normal conditions of use or in a foreseeable emergency.
(b)(3) This section applies to laboratories only as follows:
(b)(3)(I) Employers shall ensure that labels on incoming containers of hazardous chemicals are not removed or defaced;

(b)(3)(ii) Employers shall maintain any material safety data sheets that are received with incoming shipments of hazardous chemicals, and ensure that they are readily accessible during each work shift to laboratory employees when they are in their work areas;

(b)(3)(iii) Employers shall ensure that laboratory employees are provided information and training in accordance with paragraph (h) of this section, except for the location and availability of the written hazard communication program under paragraph (h)(2)(iii) of this section; and,

(b)(3)(iv) Laboratory employers that ship hazardous chemicals are considered to be either a chemical manufacturer or a distributor under this rule, and thus must ensure that any containers of hazardous chemicals leaving the laboratory are labeled in accordance with paragraph (f)(1) of this section, and that a material safety data sheet is provided to distributors and other employers in accordance with paragraphs (g)(6) and (g)(7) of this section.

(b)(4) In work operations where employees only handle chemicals in sealed containers which are not opened under normal conditions of use (such as are found in marine cargo handling, warehousing, or retail sales), this section applies to these operations only as follows:
(b)(4)(I) Employers shall ensure that labels on incoming containers of hazardous chemicals are not removed or defaced;

(b)(4)(ii) Employers shall maintain copies of any material safety data sheets that are received with incoming shipments of the sealed containers of hazardous chemicals, shall obtain a material safety data sheet as soon as possible for sealed containers of hazardous chemicals received without a material safety data sheet if an employee requests the material safety data sheet, and shall

ensure that the material safety data sheets are readily accessible during each work shift to employees when they are in their work area(s); and,

(b)(4)(iii) Employers shall ensure that employees are provided with information and training in accordance with paragraph (h) of this section (except for the location and availability of the written hazard communication program under paragraph (h)(2)(iii) of this section), to the extent necessary to protect them in the event of a spill or leak of a hazardous chemical from a sealed container.
(b)(5) This section does not require labeling of the following chemicals:

(b)(5)(I) Any pesticide as such term is defined in the Federal Insecticide, Fungicide, and Rodenticide Act (7 U.S.C. 136 et seq.), when subject to the labeling requirements of that Act and labeling regulations issued under that Act by the Environmental Protection Agency;

(b)(5)(ii) Any chemical substance or mixture as such terms are defined in the Toxic Substances Control Act (15 U.S.C. 260et seq.), when subject to the labeling requirements of that Act and labeling regulations issued under that Act by the Environmental Protection Agency;

(b)(5)(iii) Any food, food additive, color additive, drug, cosmetic, or medical or veterinary device or product, including materials intended for use as ingredients in such products (e.g. flavors and fragrances), as such terms are defined in the Federal Food, Drug, and Cosmetic Act (21 U.S.C. 301 et seq.) or the Virus-Serum-Toxin Act of 1913 (21 U.S.C. 151 et seq.), and regulations issued under those Acts, when they are subject to the labeling requirements under those Acts by either the Food and Drug Administration or the Department of Agriculture;

(b)(5)(iv) Any distilled spirits (beverage alcohols), wine, or malt beverage intended for nonindustrial use, as such terms are defined in the Federal Alcohol Administration Act (27 U.S.C. 201 et seq.) and regulations issued under that Act, when subject to the labeling requirements of that Act and labeling regulations issued under that Act by the Bureau of Alcohol, Tobacco, and Firearms;

(b)(5)(v) Any consumer product or hazardous substance as those terms are defined in the Consumer Product Safety Act (15 U.S.C.

2051 et seq.) and Federal Hazardous Substances Act (15 U.S.C. 1261 et seq.) respectively, when subject to a consumer product safety standard or labeling requirement of those Acts, or regulations issued under those Acts by the Consumer Product Safety Commission; and,

(b)(5)(vi) Agricultural or vegetable seed treated with pesticides and labeled in accordance with the Federal Seed Act (7 U.S.C. 1551 et seq.) and the labeling regulations issued under that Act by the Department of Agriculture.

(b)(6) This section does not apply to: (I) Any hazardous waste as such term is defined by the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act of 1976, as amended (42 U.S.C. 6901 et seq.), when subject to regulations issued under that Act by the Environmental Protection Agency;

(b)(6)(ii) Any hazardous substance as such term is defined by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) (42 U.S.C. 9601 et seq.), when the hazardous substance is the focus of remedial or removal action being conducted under CERCLA in accordance with Environmental Protection Agency regulations.01/10/95
(b)(6)(iii) Tobacco or tobacco products;

(b)(6)(iv) Wood or wood products, including lumber which will not be processed, where the chemical manufacturer or importer can establish that the only hazard they pose to employees is the potential for flammability or combustibility (wood or wood products which have been treated with a hazardous chemical covered by this standard, and wood which may be subsequently sawed or cut, generating dust, are not exempted);

(b)(6)(v) Articles (as that term is defined in paragraph © of this section);

(b)(6)(vi) Food or alcoholic beverages which are sold, used, or prepared in a retail establishment (such as a grocery store, restaurant, or drinking place), and foods intended for personal consumption by employees while in the workplace;

(b)(6)(vii) Any drug, as that term is defined in the Federal Food, Drug, and Cosmetic Act (21 U.S.C. 301 et seq.), when it is in solid, final form for direct administration to the patient (e.g., tablets or pills); drugs which are packaged by the chemical manufacturer for sale to consumers in a retail

establishment (e.g., over-the-counter drugs); and drugs intended for personal consumption by employees while in the workplace (e.g., first aid supplies);

(b)(6)(viii) Cosmetics which are packaged for sale to consumers in a retail establishment, and cosmetics intended for personal consumption by employees while in the workplace;

(b)(6)(ix) Any consumer product or hazardous substance, as those terms are defined in the Consumer Product Safety Act (15 U.S.C. 2051 et seq.) and Federal Hazardous Substances Act (15 U.S.C. 1261 et seq.) respectively, where the employer can show that it is used in the workplace for the purpose intended by the chemical manufacturer or importer of the product, and the use results in a duration and frequency of exposure which is not greater than the range of exposures that could reasonable be experienced by consumers when used for the purpose intended;

(b)(6)(x) Nuisance particulates where the chemical manufacturer or importer can establish that they do not pose any physical or health hazard covered under this section;

(b)(6)(xi) Ionizing and nonionizing radiation; and,

(b)(6)(xii) Biological hazards.

© Definitions.

Article means a manufactured item other than a fluid or particle: (I) which is formed to a specific shape or design during manufacture; (ii) which has end use function(s) dependent in whole or in part upon its shape or design during end use; and (iii) which under normal conditions of use does not release more than very small quantities, e.g., minute or trace amounts of a hazardous chemical (as determined under paragraph (d) of this section), and does not pose a physical hazard or health risk to employees.

Assistant Secretary means the Assistant Secretary of Labor for Occupational Safety and Health, U.S. Department of Labor, or designee.

Chemical means any element, chemical compound or mixture of elements and/or compounds.

Chemical manufacturer means an employer with a workplace where

chemical(s) are produced for use or distribution.

Chemical name means the scientific designation of a chemical in accordance with the nomenclature system developed by the International Union of Pure and Applied Chemistry (IUPAC) or the Chemical Abstracts Service (CAS) rules of nomenclature, or a name which will clearly identify the chemical for the purpose of conducting a hazard evaluation.

Combustible liquid means any liquid having a flashpoint at or above 100 F (37.8 C), but below 200 F (93.3 C), except any mixture having components with flashpoints of 200 F (93.3 C), or higher, the total volume of which make up 99 percent or more of the total volume of the mixture.

Commercial account means an arrangement whereby a retail distributor sells hazardous chemicals to an employer, generally in large quantities over time and/or at costs that are below the regular retail price.

Common name means any designation or identification such as code name, code number, trade name, brand name or generic name used to identify a chemical other than by its chemical name.

Compressed gas means:

(c)(1)(I) A gas or mixture of gases having, in a container, an absolute pressure exceeding 40 psi at 70 F (21.1 C); or

(c)(1)(ii) A gas or mixture of gases having, in a container, an absolute pressure exceeding 104 psi at 130 F (54.4 C) regardless of the pressure at 70 F (21.1 C); or

(c)(1)(iii) A liquid having a vapor pressure exceeding 40 psi at 100 F (37.8 C) as determined by ASTM D-323-72.

Container means any bag, barrel, bottle, box, can, cylinder, drum, reaction vessel, storage tank, or the like that contains a hazardous chemical. For purposes of this section, pipes or piping systems, and engines, fuel tanks, or other operating systems in a vehicle, are not considered to be containers.

Designated representative means any individual or organization to whom an employee gives written authorization to exercise such employee's rights under this section. A recognized or certified collective bargaining agent shall be treated automatically as a

designated representative without regard to written employee authorization.

Director means the Director, National Institute for Occupational Safety and Health, U.S. Department of Health and Human Services, or designee.

Distributor means a business, other than a chemical manufacturer or importer, which supplies hazardous chemicals to other distributors or to employers.

Employee means a worker who may be exposed to hazardous chemicals under normal operating conditions or in foreseeable emergencies. Workers such as office workers or bank tellers who encounter hazardous chemicals only in non-routine, isolated instances are not covered.

Employer means a person engaged in a business where chemicals are either used, distributed, or are produced for use or distribution, including a contractor or subcontractor.

Explosive means a chemical that causes a sudden, almost instantaneous release of pressure, gas, and heat when subjected to sudden shock, pressure, or high temperature.

Exposure or exposed means that an employee is subjected in the course of employment to a chemical that is a physical or health hazard, and includes potential (e.g. accidental or possible) exposure. "Subjected" in terms of health hazards includes any route of entry (e.g. inhalation, ingestion, skin contact or absorption.)

Flammable means a chemical that falls into one of the following categories:

(c)(2)(I) Aerosol, flammable means an aerosol that, when tested by the method described in 16 CFR 1500.45, yields a flame projection exceeding 18 inches at full valve opening, or a flashback (a flame extending back to the valve) at any degree of valve opening;

(c)(2)(ii) Gas, flammable means:

(c)(2)(ii)(A) A gas that, at ambient temperature and pressure, forms a flammable mixture with air at a concentration of thirteen (13) percent by volume or less; or

(c)(2)(ii)(B) A gas that, at ambient temperature and pressure, forms a range of flammable mixtures with air wider than twelve (12) percent by volume, regardless of the lower limit;

(c)(2)(iii) Liquid, flammable means any liquid having a flashpoint below 100 F (37.8 C), except any mixture having components with flashpoints of 100 F (37.8 C) or higher, the total of which make up 99 percent or more of the total volume of the mixture.

(c)(2)(iv) Solid, flammable means a solid, other than a blasting agent or explosive as defined in °1910.109(a), that is liable to cause fire through friction, absorption of moisture, spontaneous chemical change, or retained heat from manufacturing or processing, or which can be ignited readily and when ignited burns so vigorously and persistently as to create a serious hazard. A chemical shall be considered to be a flammable solid if, when tested by the method described in 16 CFR 1500.44, it ignites and burns with a self-sustained flame at a rate greater than one-tenth of an inch per second along its major axis. Flashpoint means the minimum temperature at which a liquid gives off a vapor in sufficient concentration to ignite when tested as follows:

(c)(3)(I) Tagliabue Closed Tester (See American National Standard Method of Test for Flash Point by Tag Closed Tester, Z11.24-1979 (ASTM D 56-79)) for liquids with a viscosity of less than 45 Saybolt Universal Seconds (SUS) at 100 F (37.8 C), that do not contain suspended solids and do not have a tendency to form a surface film under test; or

(c)(3)(ii) Pensky-Martens Closed Tester (See American National Standard Method of Test for Flash Point by Pensky-Martens Closed Tester, Z11.7-1979 (ASTM D 93-79)) for liquids with a viscosity equal to or greater than 45 SUS at 100 F (37.8 C), or that contain suspended solids, or that have a tendency to form a surface film under test; or

(c)(3)(iii) Setaflash Closed Tester (see American National Standard Method of Test for Flash Point by Setaflash Closed Tester (ASTM D 3278-78)). Organic peroxides, which undergo autoaccelerating thermal decomposition, are excluded from any of the flashpoint determination methods specified above.

Foreseeable emergency means any potential occurrence such as, but not limited to, equipment failure, rupture of containers, or

failure of control equipment which could result in an uncontrolled release of a hazardous chemical into the workplace.

Hazardous chemical means any chemical which is a physical hazard or a health hazard.

Hazard warning means any words, pictures, symbols, or combination thereof appearing on a label or other appropriate form of warning which convey the specific physical and health hazard(s), including target organ effects, of the chemical(s) in the container(s). (See the definitions for "physical hazard" and "health hazard" to determine the hazards which must be covered.)1/10/95

Health hazard means a chemical for which there is statistically significant evidence based on at least one study conducted in accordance with established scientific principles that acute or chronic health effects may occur in exposed employees. The term "health hazard" includes chemicals which are carcinogens, toxic or highly toxic agents, reproductive toxins, irritants, corrosives, sensitizers, hepatotoxins, nephrotoxins, neurotoxins, agents which act on the hematopoietic system, and agents which damage the lungs, skin, eyes, or mucous membranes. Appendix A provides further definitions and explanations of the scope of health hazards covered by this section, and Appendix B describes the criteria to be used to determine whether or not a chemical is to be considered hazardous for purposes of this standard.

Identity means any chemical or common name which is indicated on the material safety data sheet (MSDS) for the chemical. The identity used shall permit cross-references to be made among the required list of hazardous chemicals, the label and the MSDS.

Immediate use means that the hazardous chemical will be under the control of and used only by the person who transfers it from a labeled container and only within the work shift in which it is transferred.

Importer means the first business with employees within the Customs Territory of the United States which receives hazardous chemicals produced in other countries for the purpose of supplying them to distributors or employers within the United States.

Label means any written, printed, or graphic material, displayed on or affixed to containers of hazardous chemicals.

Material safety data sheet (MSDS) means written or printed material concerning a hazardous chemical which is prepared in accordance with paragraph (g) of this section.

Mixture means any combination of two or more chemicals if the combination is not, in whole or in part, the result of a chemical reaction.

Organic peroxide means an organic compound that contains the bivalent -O-O-structure and which may be considered to be a structural derivative of hydrogen peroxide where one or both of the hydrogen atoms has been replaced by an organic radical.

Oxidizer means a chemical other than a blasting agent or explosive as defined in °1910.109(a), that initiates or promotes combustion in other materials, thereby causing fire either of itself or through the release of oxygen or other gases.

Physical hazard means a chemical for which there is scientifically valid evidence that it is a combustible liquid, a compressed gas, explosive, flammable, an organic peroxide, an oxidizer, pyrophoric, unstable (reactive) or water-reactive.

Produce means to manufacture, process, formulate, blend, extract, generate, emit, or repackage.

Pyrophoric means a chemical that will ignite spontaneously in air at a temperature of 130 F (54.4 C) or below.

Responsible party means someone who can provide additional information on the hazardous chemical and appropriate emergency procedures, if necessary.

Specific chemical identity means the chemical name, Chemical Abstracts Service (CAS) Registry Number, or any other information that reveals the precise chemical designation of the substance.

Trade secret means any confidential formula, pattern, process, device, information or compilation of information that is used in an employer's business, and that gives the employer an opportunity to obtain an advantage over competitors who do not know or use it. Appendix D sets out the criteria to be used in evaluating trade secrets.

Unstable (reactive) means a chemical which in the pure state, or as produced or transported, will vigorously polymerize,

decompose, condense, or will become self-reactive under conditions of shocks, pressure or temperature.

Use means to package, handle, react, emit, extract, generate as a byproduct, or transfer.

Water-reactive means a chemical that reacts with water to release a gas that is either flammable or presents a health hazard.

Work area means a room or defined space in a workplace where hazardous chemicals are produced or used, and where employees are present.

Workplace means an establishment, job site, or project, at one geographical location containing one or more work areas.

(d) Hazard determination. (1) Chemical manufacturers and importers shall evaluate chemicals produced in their workplaces or imported by them to determine if they are hazardous. Employers are not required to evaluate chemicals unless they choose not to rely on the evaluation performed by the chemical manufacturer or importer for the chemical to satisfy this requirement.

(d)(2) Chemical manufacturers, importers or employers evaluating chemicals shall identify and consider the available scientific evidence concerning such hazards. For health hazards, evidence which is statistically significant and which is based on at least one positive study conducted in accordance with established scientific principles is considered to be sufficient to establish a hazardous effect if the results of the study meet the definitions of health hazards in this section. Appendix A shall be consulted for the scope of health hazards covered, and Appendix B shall be consulted for the criteria to be followed with respect to the completeness of the evaluation, and the data to be reported.

(d)(3) The chemical manufacturer, importer or employer evaluating chemicals shall treat the following sources as establishing that the chemicals listed in them are hazardous:

(d)(3)(I) 29 CFR Part 1910, Subpart Z, Toxic and Hazardous Substances, Occupational Safety and Health Administration (OSHA); or,

(d)(3)(ii) Threshold Limit Values for Chemical Substances and Physical Agents in the Work Environment, American Conference of

Governmental Industrial Hygienists (ACGIH) (latest edition). The chemical manufacturer, importer, or employer is still responsible for evaluating the hazards associated with the chemicals in these source lists in accordance with the requirements of this standard.

(d)(4) Chemical manufacturers, importers and employers evaluating chemicals shall treat the following sources as establishing that a chemical is a carcinogen or potential carcinogen for hazard communication purposes:

(d)(4)(I) National Toxicology Program (NTP), Annual Report on Carcinogens (latest edition);

(d)(4)(ii) International Agency for Research on Cancer (IARC) Monographs (latest editions); or

(d)(4)(iii) 29 CFR Part 1910, Subpart Z, Toxic and Hazardous Substances, Occupational Safety and Health Administration. NOTE: The Registry of Toxic Effects of Chemical Substances published by the National Institute for Occupational Safety and Health indicates whether a chemical has been found by NTP or IARC to be a potential carcinogen.

(d)(5) The chemical manufacturer, importer or employer shall determine the hazards of mixtures of chemicals as follows:

(d)(5)(I) If a mixture has been tested as a whole to determine its hazards, the results of such testing shall be used to determine whether the mixture is hazardous;

(d)(5)(ii) If a mixture has not been tested as a whole to determine whether the mixture is a health hazard, the mixture shall be assumed to present the same health hazards as do the components which comprise one percent (by weight or volume) or greater of the mixture, except that the mixture shall be assumed to present a carcinogenic hazard if it contains a component in concentrations of 0.1 percent or greater which is considered to be a carcinogen under paragraph (d)(4) of this section;

(d)(5)(iii) If a mixture has not been tested as a whole to determine whether the mixture is a physical hazard, the chemical manufacturer, importer, or employer may use whatever scientifically valid data is available to evaluate the physical hazard potential of the mixture; and,

(d)(5)(iv) If the chemical manufacturer, importer, or employer has evidence to indicate that a component present in the mixture in concentrations of less than one percent (or in the case of carcinogens, less than 0.1 percent) could be released in concentrations which would exceed an established OSHA permissible exposure limit or ACGIH Threshold Limit Value, or could present a health risk to employees in those concentrations, the mixture shall be assumed to present the same hazard.

(d)(6) Chemical manufacturers, importers, or employers evaluating chemicals shall describe in writing the procedures they use to determine the hazards of the chemical they evaluate. The written procedures are to be made available, upon request, to employees, their designated representatives, the Assistant Secretary and the Director. The written description may be incorporated into the written hazard communication program required under paragraph (e) of this section.

(e) Written hazard communication program. (1) Employers shall develop, implement, and maintain at each workplace, a written hazard communication program which at least describes how the criteria specified in paragraphs (f), (g), and (h) of this section for labels and other forms of warning, material safety data sheets, and employee information and training will be met, and which also includes the following:

(e)(1)(I) A list of the hazardous chemicals known to be present using an identity that is referenced on the appropriate material safety data sheet (the list may be compiled for the workplace as a whole or for individual work areas); and,

(e)(1)(ii) The methods the employer will use to inform employees of the hazards of non-routine tasks (for example, the cleaning of reactor vessels), and the hazards associated with chemicals contained in unlabeled pipes in their work areas.

(e)(2) Multi-employer workplaces. Employers who produce, use, or store hazardous chemicals at a workplace in such a way that the employees of other employer(s) may be exposed (for example, employees of a construction contractor working on-site) shall additionally ensure that the hazard communication programs developed and implemented under this paragraph (e) include the following:

(e)(2)(I) The methods the employer will use to provide the other employer(s) on-site access to material safety data sheets for

each hazardous chemical the other employer(s)' employees may be exposed to while working;

(e)(2)(ii) The methods the employer will use to inform the other employer(s) of any precautionary measures that need to be taken to protect employees during the workplace's normal operating conditions and in foreseeable emergencies; and,

(e)(2)(iii) The methods the employer will use to inform the other employer(s) of the labeling system used in the workplace.

(e)(3) The employer may rely on an existing hazard communication program to comply with these requirements, provided that it meets the criteria established in this paragraph (e).

(e)(4) The employer shall make the written hazard communication program available, upon request, to employees, their designated representatives, the Assistant Secretary and the Director, in accordance with the requirements of 29 CFR °1910.20(e).

(e)(5) Where employees must travel between workplaces during a work shift, i.e., their work is carried out at more than one geographical location, the written hazard communication program may be kept at the primary workplace facility.

(f) Labels and other forms of warning. (1) The chemical manufacturer, importer, or distributor shall ensure that each container of hazardous chemicals leaving the workplace is labeled, tagged or marked with the following information:

(f)(1)(I) Identity of the hazardous chemical(s);

(f)(1)(ii) Appropriate hazard warnings; and

(f)(1)(iii) Name and address of the chemical manufacturer, importer, or other responsible party.

(f)(2)(I) For solid metal (such as a steel beam or a metal casting), solid wood, or plastic items that are not exempted as articles due to their downstream use, or shipments of whole grain, the required label may be transmitted to the customer at the time of the initial shipment, and need not be included with subsequent shipments to the same employer unless the information on the label changes;

(f)(2)(ii) The label may be transmitted with the initial shipment

itself, or with the material safety data sheet that is to be provided prior to or at the time of the first shipment; and,

(f)(2)(iii) This exception to requiring labels on every container of hazardous chemicals is only for the solid material itself, and does not apply to hazardous chemicals used in conjunction with, or known to be present with, the material and to which employees handling the items in transit may be exposed (for example, cutting fluids or pesticides in grains.)

(f)(3) Chemical manufacturers, importers, or distributors shall ensure that each container of hazardous chemicals leaving the workplace is labeled, tagged, or marked in accordance with this section in a manner which does not conflict with the requirements of the Hazardous Materials Transportation Act (49 U.S.C. 1801 et seq.) and regulations issued under that Act by the Department of Transportation.

(f)(4) If the hazardous chemical is regulated by OSHA in a substance-specific health standard, the chemical manufacturer, importer, distributor or employer shall ensure that the labels or other forms of warning used are in accordance with the requirements of that standard.

(f)(5) Except as provided in paragraphs (f)(6) and (f)(7) of this section, the employer shall ensure that each container of hazardous chemicals in the workplace is labeled, tagged or marked with the following information:

(f)(5)(I) Identity of the hazardous chemical(s) contained therein; and,

(f)(5)(ii) Appropriate hazard warnings, or alternatively, words, pictures, symbols, or combination thereof, which provide at least general information regarding the hazards of the chemicals, and which, in conjunction with the other information immediately available to employees under the hazard communication program, will provide employees with the specific information regarding the physical and health hazards of the hazardous chemical.

(f)(6) The employer may use signs, placards, process sheets, batch tickets, operating procedures, or other such written materials in lieu of affixing labels to individual stationary process containers, as long as the alternative method identifies the containers to which it is applicable and conveys the information required by paragraph (f)(5) of this section to be on

a label. The written materials shall be readily accessible to the employees in their work area throughout each work shift.

(f)(7) The employer is not required to label portable containers into which hazardous chemicals are transferred from labeled containers, and which are intended only for the immediate use of the employee who performs the transfer. For purposes of this section, drugs which are dispensed by a pharmacy to a health care provider for direct administration to a patient are exempted from labeling.

(f)(8) The employer shall not remove or deface existing labels on incoming containers of hazardous chemicals, unless the container is immediately marked with the required information.

(f)(9) The employer shall ensure that labels or other forms of warning are legible, in English, and prominently displayed on the container, or readily available in the work area throughout each work shift. Employers having employees who speak other languages may add the information in their language to the material presented, as long as the information is presented in English as well.

(f)(10) The chemical manufacturer, importer, distributor or employer need not affix new labels to comply with this section if existing labels already convey the required information.

(f)(11) Chemical manufacturers, importers, distributors, or employers who become newly aware of any significant information regarding the hazards of a chemical shall revise the labels for the chemical within three months of becoming aware of the new information. Labels on containers of hazardous chemicals shipped after that time shall contain the new information. If the chemical is not currently produced or imported, the chemical manufacturer, importers, distributor, or employer shall add the information to the label before the chemical is shipped or introduced into the workplace again.

(g) Material safety data sheets. (1) Chemical manufacturers and importers shall obtain or develop a material safety data sheet for each hazardous chemical they produce or import. Employers shall have a material safety data sheet in the workplace for each hazardous chemical which they use.

(g)(2) Each material safety data sheet shall be in English (although the employer may maintain copies in other languages as

well), and shall contain at least the following information:

(g)(2)(I) The identity used on the label, and, except as provided for in paragraph (I) of this section on trade secrets:

(g)(2)(I)(A) If the hazardous chemical is a single substance, its chemical and common name(s);

(g)(2)(I)(B) If the hazardous chemical is a mixture which has been tested as a whole to determine its hazards, the chemical and common name(s) of the ingredients which contribute to these known hazards, and the common name(s) of the mixture itself; or,

(g)(2)(I)(C) If the hazardous chemical is a mixture which has not been tested as a whole:

(1) The chemical and common name(s) of all ingredients which have been determined to be health hazards, and which comprise 1% or greater of the composition, except that chemicals identified as carcinogens under paragraph (d) of this section shall be listed if the concentrations are 0.1% or greater; and,

(2) The chemical and common name(s) of all ingredients which have been determined to be health hazards, and which comprise less than 1% (0.1% for carcinogens) of the mixture, if there is evidence that the ingredient(s) could be released from the mixture in concentrations which would exceed an established OSHA permissible exposure limit or ACGIH Threshold Limit Value, or could present a health hazard to employees; and,

(3) The chemical and common name(s) of all ingredients which have been determined to present a physical hazard when present in the mixture;

(g)(2)(ii) Physical and chemical characteristics of the hazardous chemical (such as vapor pressure, flash point);

(g)(2)(iii) The physical hazards of the hazardous chemical, including the potential for fire, explosion, and reactivity;

(g)(2)(iv) The health hazards of the hazardous chemical, including signs and symptoms of exposure, and any medical conditions which are generally recognized as being aggravated by exposure to the chemical;

(g)(2)(v) The primary route(s) of entry;

(g)(2)(vi) The OSHA permissible exposure limit, ACGIH Threshold Limit Value, and any other exposure limit used or recommended by the chemical manufacturer, importer, or employer preparing the material safety data sheet, where available;

(g)(2)(vii) Whether the hazardous chemical is listed in the National Toxicology Program (NTP) Annual Report on Carcinogens (latest edition) or has been found to be a potential carcinogen in the International Agency for Research on Cancer (IARC) Monographs (latest editions), or by OSHA;

(g)(2)(viii) Any generally applicable precautions for safe handling and use which are known to the chemical manufacturer, importer or employer preparing the material safety data sheet, including appropriate hygienic practices, protective measures during repair and maintenance of contaminated equipment, and procedures for clean-up of spills and leaks;

(g)(2)(ix) Any generally applicable control measures which are known to the chemical manufacturer, importer or employer preparing the material safety data sheet, such as appropriate engineering controls, work practices, or personal protective equipment;

(g)(2)(x) Emergency and first aid procedures;

(g)(2)(xi) The date of preparation of the material safety data sheet or the last change to it; and,

(g)(2)(xii) The name, address and telephone number of the chemical manufacturer, importer, employer or other responsible party preparing or distributing the material safety data sheet, who can provide additional information on the hazardous chemical and appropriate emergency procedures, if necessary.

(g)(3) If no relevant information is found for any given category on the material safety data sheet, the chemical manufacturer, importer or employer preparing the material safety data sheet shall mark it to indicate that no applicable information was found.

(g)(4) Where complex mixtures have similar hazards and contents (i.e. the chemical ingredients are essentially the same, but the specific composition varies from mixture to mixture), the chemical
manufacturer, importer or employer may prepare one material

safety data sheet to apply to all of these similar mixtures.

(g)(5) The chemical manufacturer, importer or employer preparing the material safety data sheet shall ensure that the information recorded accurately reflects the scientific evidence used in making the hazard determination. If the chemical manufacturer, importer or employer preparing the material safety data sheet becomes newly aware of any significant information regarding the hazards of a chemical, or ways to protect against the hazards, this new information shall be added to the material safety data sheet within three months. If the chemical is not currently being produced or imported the chemical manufacturer or importer shall add the information to the material safety data sheet before the chemical is introduced into the workplace again.

(g)(6)(I) Chemical manufacturers or importers shall ensure that distributors and employers are provided an appropriate material safety data sheet with their initial shipment, and with the first shipment after a material safety data sheet is updated;

(g)(6)(ii) The chemical manufacturer or importer shall either provide material safety data sheets with the shipped containers or sent them to the distributor or employer prior to or at the time of the shipment;

(g)(6)(iii) If the material safety data sheet is not provided with a shipment that has been labeled as a hazardous chemical, the distributor or employer shall obtain one from the chemical manufacturer or importer as soon as possible; and,

(g)(6)(iv) The chemical manufacturer or importer shall also provide distributors or employers with a material safety data sheet upon request.

(g)(7)(I) Distributors shall ensure that materials safety data sheets, and updated information, are provided to other distributors and employers with their initial shipment and with the first shipment after a material safety data sheet is updated;

(g)(7)(ii) The distributor shall either provide material safety data sheets with the shipped containers, or send them to the other distributor or employer prior to or at the time of the shipment;

(g)(7)(iii) Retail distributors selling hazardous chemicals to employers having a commercial account shall provide a material

safety data sheet to such employers upon request, and shall post a sign or otherwise inform them that a material safety data sheet is available;

(g)(7)(iv) Wholesale distributors selling hazardous chemicals to employers over-the-counter may also provide material safety data sheets upon the request of the employer at the time of the over-the-counter purchase, and shall post a sign or otherwise inform such employers that a material safety data sheet is available; 1/10/95

(g)(7)(v) If an employer without a commercial account purchases a hazardous chemical from a retail distributor not required to have material safety data sheets on file (i.e., the retail distributor does not have commercial accounts and does not use the materials), the retail distributor shall provide the employer, upon request, with the name, address, and telephone number of the chemical manufacturer, importer, or distributor from which a material safety data sheet can be obtained;

(g)(7)(vi) Wholesale distributors shall also provide material safety data sheets to employers or other distributors upon request; and,

(g)(7)(vii) Chemical manufacturers, importers, and distributors need not provide material safety data sheets to retail distributors that have informed them that the retail distributor does not sell the product to commercial accounts or open the sealed container to use it in their own workplaces.

(g)(8) The employer shall maintain in the workplace copies of the required material safety data sheets for each hazardous chemical, and shall ensure that they are readily accessible during each work shift to employees when they are in their work area(s). (Electronic access, microfiche, and other alternatives to maintaining paper copies of the material safety data sheets are permitted as long as no barriers to immediate employee access in each workplace are created by such options.)

(g)(9) Where employees must travel between workplaces during a work shift, i.e., their work is carried out at more than one geographical location, the material safety data sheets may be kept at the primary workplace facility. In this situation, the employer shall ensure that employees can immediately obtain the required information in an emergency.

(g)(10) Material safety data sheets may be kept in any form, including operating procedures, and may be designed to cover groups of hazardous chemicals in a work area where it may be more appropriate to address the hazards of a process rather than individual hazardous chemicals. However, the employer shall ensure that in all cases the required information is provided for each hazardous chemical, and is readily accessible during each work shift to employees when they are in their work areas(s).

(g)(11) Material safety data sheets shall also be made readily available, upon request, to designated representatives and to the Assistant Secretary, in accordance with the requirements of 29 CFR °1910.20(e). The Director shall also be given access to material safety data sheets in the same manner.

(h) Employee information and training. (1) Employers shall provide employees with effective information and training on hazardous chemicals in their work area at the time of their initial assignment, and whenever a new physical or health hazard the employees have not previously been trained about is introduced into their work area. Information and training may be designed to cover categories of hazards (e.g., flammability, carcinogenicity) or specific chemicals. Chemical-specific information must always be available through labels and material safety data sheets.

(h)(2) Information. Employees shall be informed of:

(h)(2)(I) The requirements of this section;

(h)(2)(ii) Any operations in their work area where hazardous chemicals are present; and,

(h)(2)(iii) The location and availability of the written hazard communication program, including the required list(s) of hazardous chemicals, and material safety data sheets required by this section.

(h)(3) Training. Employee training shall include at least:

(h)(3)(I) Methods and observations that may be used to detect the presence or release of a hazardous chemical in the work area (such as monitoring conducted by the employer, continuous monitoring devices, visual appearance or odor of hazardous chemicals when being released, etc.);

(h)(3)(ii) The physical and health hazards of the chemicals in the work area;

(h)(3)(iii) The measures employees can take to protect themselves from these hazards, including specific procedures the employer has implemented to protect employees from exposure to hazardous chemicals, such as appropriate work practices, emergency procedures, and personal protective equipment to be used; and,

(h)(3)(iv) The details of the hazard communication program developed by the employer, including an explanation of the labeling system and the material safety data sheet, and how employees can obtain and use the appropriate hazard information.

(I) Trade secrets. (1) The chemical manufacturer, importer, or employer may withhold the specific chemical identity, including the chemical name and other specific identification of a hazardous chemical, from the material safety data sheet, provided that:

(I)(1)(I) The claim that the information withheld is a trade secret can be supported;

(I)(1)(ii) Information contained in the material safety data sheet concerning the properties and effects of the hazardous chemical is disclosed;

(I)(1)(iii) The material safety data sheet indicates that the specific chemical identity is being withheld as a trade secret; and,

(I)(1)(iv) The specific chemical identity is made available to health professionals, employees, and designated representatives in accordance with the applicable provisions of this paragraph.

(I)(2) Where a treating physician or nurse determines that a medical emergency exists and the specific chemical identity of a hazardous chemical is necessary for emergency or first-aid treatment, the chemical manufacturer, importer, or employer shall immediately disclose the specific chemical identity of a trade secret chemical to that treating physician or nurse, regardless of the existence of a written statement of need or a confidentiality agreement. The chemical manufacturer, importer, or employer may require a written statement of need and confidentiality agreement, in accordance with the provisions of paragraphs (I)(3) and (4) of this section, as soon as

circumstances permit.

(I)(3) In non-emergency situations, a chemical manufacturer, importer, or employer shall, upon request, disclose a specific chemical identity, otherwise permitted to be withheld under paragraph (I)(1) of this section, to a health professional (i.e. physician, industrial hygienist, toxicologist, epidemiologist, or occupational health nurse) providing medical or other occupational health services to exposed employee(s), and to employees or designated representatives, if:

(I)(3)(I) The request is in writing;

(I)(3)(ii) The request describes with reasonable detail one or more of the following occupational health needs for the information:

(I)(3)(ii)(A) To assess the hazards of the chemicals to which employees will be exposed;

(I)(3)(ii)(B) To conduct or assess sampling of the workplace atmosphere to determine employee exposure levels;

(I)(3)(ii)(C) To conduct pre-assignment or periodic medical surveillance of exposed employees;

(I)(3)(ii)(D) To provide medical treatment to exposed employees;

(I)(3)(ii)(E) To select or assess appropriate personal protective equipment for exposed employees;

(I)(3)(ii)(F) To design or assess engineering controls or other protective measures for exposed employees; and,

(h)(3)(ii)(G) To conduct studies to determine the health effects of exposure.

(I)(3)(iii) The request explains in detail why the disclosure of the specific chemical identity is essential and that, in lieu thereof, the disclosure of the following information to the health professional, employee, or designated representative, would not satisfy the purposes described in paragraph (I)(3)(ii) of this section:

(I)(3)(iii)(A) The properties and effects of the chemical;
(I)(3)(iii)(B) Measures for controlling workers' exposure to the

chemical;

(I)(3)(iii)(C) Methods of monitoring and analyzing worker exposure to the chemical; and,

(I)(3)(iii)(D) Methods of diagnosing and treating harmful exposures to the chemical;

(I)(3)(iv) The request includes a description of the procedures to be used to maintain the confidentiality of the disclosed information; and,

(I)(3)(v) The health professional, and the employer or contractor of the services of the health professional (i.e. downstream employer, labor organization, or individual employee), employee, or designated representative, agree in a written confidentiality agreement that the health professional, employee, or designated representative, will not use the trade secret information for any purpose other than the health need(s) asserted and agree not to release the information under any circumstances other than to OSHA, as provided in paragraph (I)(6) of this section, except as authorized by the terms of the agreement or by the chemical manufacturer, importer, or employer.

(I)(4) The confidentiality agreement authorized by paragraph (I)(3)(iv) of this section:

(I)(4)(I) May restrict the use of the information to the health purposes indicated in the written statement of need;

(I)(4)(ii) May provide for appropriate legal remedies in the event of a breach of the agreement, including stipulation of a reasonable pre-estimate of likely damages; and,

(I)(4)(iii) May not include requirements for the posting of a penalty bond.

(I)(5) Nothing in this standard is meant to preclude the parties from pursuing non-contractual remedies to the extent permitted by law.

(I)(6) If the health professional, employee, or designated representative receiving the trade secret information decides that there is a need to disclose it to OSHA, the chemical manufacturer, importer, or employer who provided the information shall be informed by the health professional, employee, or designated representative prior to, or at the same time as, such

disclosure.

(I)(7) If the chemical manufacturer, importer, or employer denies a written request for disclosure of a specific chemical identity, the denial must:

(I)(7)(I) Be provided to the health professional, employee, or designated representative, within thirty days of the request;
(I)(7)(ii) Be in writing;

(I)(7)(iii) Include evidence to support the claim that the specific chemical identity is a trade secret;

(I)(7)(iv) State the specific reasons why the request is being denied; and,

(I)(7)(v) Explain in detail how alternative information may satisfy the specific medical or occupational health need without revealing the specific chemical identity.

(I)(8) The health professional, employee, or designated representative whose request for information is denied under paragraph (I)(3) of this section may refer the request and the written denial of the request to OSHA for consideration.

(I)(9) When a health professional, employee, or designated representative refers the denial to OSHA under paragraph (I)(8) of this section, OSHA shall consider the evidence to determine if:

(I)(9)(I) The chemical manufacturer, importer, or employer has supported the claim that the specific chemical identity is a trade secret;

(I)(9)(ii) The health professional, employee, or designated representative has supported the claim that there is a medical or occupational health need for the information; and,

(I)(9)(iii) The health professional, employee, or designated representative has demonstrated adequate means to protect the confidentiality.

(I)(10)(I) If OSHA determines that the specific chemical identity requested under paragraph (I)(3) of this section is not a bona fide trade secret, or that it is a trade secret, but the requesting health professional, employee, or designated

representative has a legitimate medical or occupational health need for the information, has executed a written confidentiality agreement, and has shown adequate means to protect the confidentiality of the information, the chemical manufacturer, importer, or employer will be subject to citation by OSHA.

(I)(10)(ii) If a chemical manufacturer, importer, or employer demonstrates to OSHA that the execution of a confidentiality agreement would not provide sufficient protection against the potential harm from the unauthorized disclosure of a trade secret specific chemical identity, the Assistant Secretary may issue such orders or impose such additional limitations or conditions upon the disclosure of the requested chemical information as may be appropriate to assure that the occupational health services are provided without an undue risk of harm to the chemical manufacturer, importer, or employer.

(I)(11) If a citation for a failure to release specific chemical identity information is contested by the chemical manufacturer, importer, or employer, the matter will be adjudicated before the Occupational Safety and Health Review Commission in accordance with the Act's enforcement scheme and the applicable Commission rules of procedure. In accordance with the Commission rules, when a chemical manufacturer, importer, or employer continues to withhold the information during the contest, the Administrative Law Judge may review the citation and supporting documentation in camera or issue appropriate orders to protect the confidentiality or such matters.

(I)(12) Notwithstanding the existence of a trade secret claim, a chemical manufacturer, importer, or employer shall, upon request, disclose to the Assistant Secretary any information which this section requires the chemical manufacturer, importer, or employer to make available. Where there is a trade secret claim, such claim shall be made no later than at the time the information is provided to the Assistant Secretary so that suitable determinations of trade secret status can be made and the necessary protections can be implemented.

(I)(13) Nothing in this paragraph shall be construed as requiring the disclosure under any circumstances of process or percentage of mixture information which is a trade secret.

(j) Effective dates. Chemical manufacturers, importers, distributors, and employers shall be in compliance with all provisions of this section by March 11, 1994.

NOTE: The effective date of the clarification that the exemption of wood and wood products from the Hazard Communication standard in paragraph (b)(6)(iv) only applies to wood and wood products including lumber which will not be processed, where the manufacturer or importer can establish that the only hazard they pose to employees is the potential for flammability or combustibility, and that the exemption does not apply to wood or wood products which have been treated with a hazardous chemical covered by this standard, and wood which may be subsequently sawed or cut generating dust has been stayed from March 11, 1994 to August 11, 1994.

APPENDIX A TO °1910.1200 HEALTH HAZARD DEFINITIONS (MANDATORY) Although safety hazards related to the physical characteristics of a chemical can be objectively defined in terms of testing requirements (e.g. flammability), health hazard definitions are less precise and more subjective. Health hazards may cause measurable changes in the body such as decreased pulmonary function. These changes are generally indicated by the occurrence of signs and symptoms in the exposed employees such as shortness of breath, a non-measurable, subjective feeling. Employees exposed to such hazards must be apprised of both the change in body function and the signs and symptoms that may occur to signal that change.

The determination of occupational health hazards is complicated by the fact that many of the effects or signs and symptoms occur commonly in non-occupationally exposed populations, so that effects of exposure are difficult to separate from normally occurring illnesses. Occasionally, a substance causes an effect that is rarely seen in the population at large, such as angiosarcomas caused by vinyl chloride exposure, thus making it easier to ascertain that the occupational exposure was the primary causative factor. More often, however, the effects are common, such as lung cancer. The situation is further complicated by the fact that most chemicals have not been adequately tested to determine their health hazard potential, and data do not exist to substantiate these effects.

There have been many attempts to categorize effects and to define them in various ways. Generally, the terms "acute" and "chronic" are used to delineate between effects on the basis of severity or duration. "Acute" effects usually occur rapidly as a result of short-term exposures, and are of short duration. "Chronic" effects generally occur as a result of long-term exposure, and are of long duration.

The acute effects referred to most frequently are those defined by the American National Standards Institute (ANSI) standard for Precautionary Labeling of Hazardous Industrial Chemicals (Z129.1-1988)-irritation, corrosivity, sensitization and lethal dose. Although these are important health effects, they do not adequately cover the considerable range of acute effects which may occur as a result of occupational exposure, such as, for example, narcosis.

Similarly, the term chronic effect is often used to cover only carcinogenicity, teratogenicity, and mutagenicity. These effects are obviously a concern in the workplace, but again, do not adequately cover the area of chronic effects, excluding, for example, blood dyscrasias (such as anemia), chronic bronchitis and liver atrophy.

The goal of defining precisely, in measurable terms, every possible health effect that may occur in the workplace as a result of chemical exposures cannot realistically be accomplished. This does not negate the need for employees to be informed of such effects and protected from them. Appendix B, which is also mandatory, outlines the principles and procedures of hazardous assessment.

For purposes of this section, any chemicals which meet any of the following definitions, as determined by the criteria set forth in Appendix B are health hazards. However, this is not intended to be an exclusive categorization scheme. If there are available scientific data that involve other animal species or test methods, they must also be evaluated to determine the applicability of the HCS.

1. Carcinogen: A chemical is considered to be a carcinogen if:
(a) It has been evaluated by the International Agency for Research on Cancer (IARC), and found to be a carcinogen or potential carcinogen; or

(b) It is listed as a carcinogen or potential carcinogen in the Annual Report on Carcinogens published by the National Toxicology Program (NTP) (latest edition); or,

© It is regulated by OSHA as a carcinogen.

2. Corrosive: A chemical that causes visible destruction of, or irreversible alterations in, living tissue by chemical action at the site of contact. For example, a chemical is considered to be

corrosive if, when tested on the intact skin of albino rabbits by the method described by the U.S. Department of Transportation in Appendix A to 49 CFR Part 173, it destroys or changes irreversibly the structure of the tissue at the site of contact following an exposure period of four hours. This term shall not refer to action on inanimate surfaces.

3. Highly toxic: A chemical falling within any of the following categories:

(a) A chemical that has a median lethal dose (LD50) of 50 milligrams or less per kilogram of body weight when administered orally to albino rats weighing between 200 and 300 grams each.

(b) A chemical that has a median lethal does (LD50) of 200 milligrams or less per kilogram of body weight when administered by continuous contact for 24 hours (or less if death occurs within 24 hours) with the bare skin of albino rabbits weighing between two and three kilograms each.

© A chemical that has a median lethal concentration (LC50) in air of 200 parts per million by volume or less of gas or vapor, or 2 milligrams per liter or less of mist, fume, or dust, when administered by continuous inhalation for one hour (or less if death occurs within one hour) to albino rats weighing between 200 and 300 grams each.

4. Irritant: A chemical, which is not corrosive, but which causes a reversible inflammatory effect on living tissue by chemical action at the site of contact. A chemical is a skin irritant if, when tested on the intact skin of albino rabbits by the methods of 16 CFR 1500.41 for four hours exposure or by other appropriate techniques, it results in an empirical score of five or more. A chemical is an eye irritant if so determined under the procedure listed in 16 CFR 1500.42 or other appropriate techniques.

5. Sensitizer: A chemical that causes a substantial proportion of exposed people or animals to develop an allergic reaction in normal tissue after repeated exposure to the chemical.

6. Toxic. A chemical falling within any of the following categories:
(a) A chemical that has a median lethal dose (LD50) of more than 50 milligrams per kilogram but not more than 500 milligrams per kilogram of body weight when administered orally to albino rats weighing between 200 and 300 grams each.

(b) A chemical that has a median lethal dose (LD50) of more than 200 milligrams per kilogram but not more than 1,000 milligrams per kilogram of body weight when administered by continuous contact for 24 hours (or less if death occurs within 24 hours) with the bare skin of albino rabbits weighing between two and three kilograms each.
© A chemical that has a median lethal concentration (LC50) in air of more than 200 parts per million but not more than 2,000 parts per million by volume of gas or vapor, or more than two milligrams per liter but not more than 20 milligrams per liter of mist, fume, or dust, when administered by continuous inhalation for one hour (or less if death occurs within one hour) to albino rats weighing between 200 and 300 grams each.

7. Target organ effects.

The following is a target organ categorization of effects which may occur, including examples of signs and symptoms and chemicals which have been found to cause such effects. These examples are presented to illustrate the range and diversity of effects and hazards found in the workplace, and the broad scope employers must consider in this area, but are not intended to be all-inclusive.

a. Hepatotoxins: Chemicals which produce liver damage
Signs & Symptoms: Jaundice; liver enlargement
Chemicals: Carbon tetrachloride; nitrosamines

b. Nephrotoxins: Chemicals which produce kidney damage
Signs & Symptoms: Edema; proteinuria
Chemicals: Halogenated hydrocarbons; uranium

c. Neurotoxins: Chemicals which produce their primary toxic effects on the nervous system
Signs & Symptoms: Narcosis; behavioral changes; decrease in motor functions
Chemicals: Mercury; carbon disulfide

d. Agents which act on the blood or hematopoietic system:
Decrease hemoglobin function: deprive the body tissues of oxygen
Signs & Symptoms: Cyanosis; loss of consciousness
Chemicals: Carbon monoxide; cyanides

e. Agents which damage the lung: Chemicals which irritate or damage pulmonary tissue
Signs & Symptoms: Cough; tightness in chest; shortness of breath

Chemicals: Silica; asbestos

f. Reproductive toxins: Chemicals which affect the reproductive capabilities including chromosomal damage (mutations) and effects on fetuses (teratogenesis)
Signs & Symptoms: Birth defects; sterility
Chemicals: Lead; DBCP

g. Cutaneous hazards: Chemicals which affect the dermal layer of the body
Signs & Symptoms: Defatting of the skin; rashes; irritation
Chemicals: Ketones; chlorinated compounds

h. Eye hazards: Chemicals which affect the eye or visual capacity
Signs & Symptoms: Conjunctivitis; corneal damage
Chemicals: Organic solvents; acids

APPENDIX B TO °1910.1200 HAZARD DETERMINATION (MANDATORY)

The quality of a hazard communication program is largely dependent upon the adequacy and accuracy of the hazard determination. The hazard determination requirement of this standard is performance-oriented. Chemical manufacturers, importers, and employers evaluating chemicals are not required to follow any specific methods for determining hazards, but they must be able to demonstrate that they have adequately ascertained the hazards of the chemicals produced or imported in accordance with the criteria set forth in this Appendix.

Hazard evaluation is a process which relies heavily on the professional judgment of the evaluator, particularly in the area of chronic hazards. The performance-orientation of the hazard determination does not diminish the duty of the chemical manufacturer, importer or employer to conduct a thorough evaluation, examining all relevant data and producing a scientifically defensible evaluation. For purposes of this standard, the following criteria shall be used in making hazard determinations that meet the requirements of this standard.

1. Carcinogenicity: As described in paragraph (d)(4) of this section and Appendix A of this section, a determination by the National Toxicology Program, the International Agency for Research on Cancer, or OSHA that a chemical is a carcinogen or potential carcinogen will be considered conclusive evidence for purposes of this section. In addition, however, all available scientific data on carcinogenicity must be evaluated in

accordance with the provisions of this Appendix and the requirements of the rule.

2. Human data: Where available, epidemiological studies and case reports of adverse health effects shall be considered in the evaluation.

3. Animal data: Human evidence of health effects in exposed populations is generally not available for the majority of chemicals produced or used in the workplace. Therefore, the available results of toxicological testing in animal populations shall be used to predict the health effects that may be experienced by exposed workers. In particular, the definitions of certain acute hazards refer to specific animal testing results (see Appendix A).

4. Adequacy and reporting of data. The results of any studies which are designed and conducted according to established scientific principles, and which report statistically significant conclusions regarding the health effects of a chemical, shall be a sufficient basis for a hazard determination and reported on any material safety data sheet. In vitro studies alone generally do not form the basis for a definitive finding of hazard under the HCS since they have a positive or negative result rather than a statistically significant finding. The chemical manufacturer, importer, or employer may also report the results of other scientifically valid studies which tend to refute the findings of hazard.

APPENDIX C TO °1910.1200 INFORMATION SOURCES (ADVISORY)

The following is a list of available data sources which the chemical manufacturer, importer, distributor, or employer may wish to consult to evaluate the hazards of chemicals they produce or import:
Any information in their own company files, such as toxicity testing results or illness experience of company employees.

Any information obtained from the supplier of the chemical, such as material safety data sheets or product safety bulletins.

Any pertinent information obtained from the following source list (latest editions should be used):

Condensed Chemical Dictionary
Van Nostrand Reinhold Co., 135 West 50th Street, New York, NY

10020.

The Merck Index: An Encyclopedia of Chemicals and Drugs
Merck and Company, Inc., 126 E. Lincoln Ave., Rahway, NJ 07065.
IARC Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Man

Geneva: World Health Organization, International Agency for Research on Cancer, 1972-Present. (Multivolume work). Summaries are available in supplement volumes. 49 Sheridan Street, Albany, NY 12210.

Industrial Hygiene and Toxicology, by F.A. Patty
John Wiley & Sons, Inc., New York, NY (Multivolume work).

Clinical Toxicology of Commercial Products
Gleason, Gosselin, and Hodge

Casarett and Doull's Toxicology; The Basic Science of Poisons
Doull, Klaassen, and Amdur, Macmillan Publishing Co., Inc., New York,

Industrial Toxicology, by Alice Hamilton and Harriet L. Hardy
Publishing Sciences Group, Inc., Acton, MA.

Toxicology of the Eye, by W. Morton Grant
Charles C. Thomas, 301-327 East Lawrence Avenue, Springfield, IL.

Recognition of Health Hazards in Industry
William A. Burgess, John Wiley and Sons, 605 Third Avenue, New York, NY 10158.

Chemical Hazards of the Workplace
Nick H. Proctor and James P. Hughes, J.P. Lipincott Company, 6 Winchester Terrace, New York, NY 10022.

Handbook of Chemistry and Physics
Chemical Rubber Company, 18901 Cranwood Parkway, Cleveland, OH 44128.

Threshold Limit Values for Chemical Substances and Physical Agents in the Work Environment and Biological Exposure Indices with Intended Changes.

American Conference of Governmental Industrial Hygienists (ACGIH). 6500 Glenway Avenue, Bldg. D-5, Cincinnati, OH 45211.

Information on the physical hazards of chemicals may be found in publications of the National Fire Protection Association, Boston, MA. Note: The following documents may be purchased from the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.
Occupational Health Guidelines
NIOSH/OSHA (NIOSH Pub. No. 81-123)

NIOSH Pocket Guide to Chemical Hazards
NIOSH Pub. No. 90-117

Registry of Toxic Effects of Chemical Substances
(Latest edition)

Miscellaneous Documents published by the National Institute for Occupational Safety and Health:

Criteria documents.
Special Hazard Reviews.
Occupational Hazard Assessments.
Current Intelligence Bulletins.

OSHA's General Industry Standards (29 CFR Part 1910)

NTP Annual Report on Carcinogens and Summary of the Annual Report on Carcinogens.

National Technical Information Service (NTIS), 5285 Port Royal Road, Springfield, VA 22161; (703)487-4650.

Bibliographic Data Bases

APPENDIX D TO °1910.1200 DEFINITION OF "TRADE SECRET" (MANDATORY) The following is a reprint of the Restatement of Torts section 757, comment b (1939):

b. Definition of trade secret. A trade secret may consist of any formula, pattern, device or compilation of information which is used in one's business, and which gives him an opportunity to obtain an advantage over competitors who do not know or use it. It may be a formula for a chemical compound, a process of manufacturing, treating or preserving materials, a pattern for a machine or other device, or a list of customers. It differs from other secret information in a business (see 759s of the Restatement of Torts which is not included in this Appendix) in that it is not simply information as to single or ephemeral

events in the conduct of the business, as, for example, the amount or other terms of a secret bid for a contract or the salary of certain employees, or the security investments made or contemplated, or the date fixed for the announcement of a new policy or for bringing out a new model or the like. A trade secret is a process or device for continuous use in the operations of the business. Generally it relates to the production of goods, as, for example, a machine or formula for the production of an article. It may, however, relate to the sale of goods or to other operations in the business, such as a code for determining discounts, rebates or other concessions in a price list or catalogue, or a list of specialized customers, or a method of bookkeeping or other office management.

Secrecy. The subject matter of a trade secret must be secret. Matters of public knowledge or of general knowledge in an industry cannot be appropriated by one as his secret. Matters which are completely disclosed by the goods which one markets cannot be his secret. Substantially, a trade secret is known only in the particular business in which it is used. It is not requisite that only the proprietor of the business know it. He may, without losing his protection, communicate it to employees involved in its use. He may likewise communicate it to others pledged to secrecy. Others may also know of it independently, as, for example, when they have discovered the process or formula by independent invention and are keeping it secret. Nevertheless, a substantial element of secrecy must exist, so that, except by the use of improper means, there would be difficulty in acquiring the information. An exact definition of a trade secret is not possible. Some factors to be considered in determining whether given information is one's trade secret are: (1) The extent to which the information is known outside of his business; (2) the extent to which it is known by employees and others involved in his business; (3) the extent of measures taken by him to guard the secrecy of the information; (4) the value of the information to him and his competitors; (5) the amount of effort or money expended by him in developing the information; (6) the ease or difficulty with which the information could be properly acquired or duplicated by others.

Novelty and prior art. A trade secret may be a device or process which is patentable; but it need not be that. It may be a device or process which is clearly anticipated in the prior art or one which is merely a mechanical improvement that a good mechanic can make. Novelty and invention are not requisite for a trade secret as they are for patentability. These requirements are essential to patentability because a patent protects against unlicensed use

of the patented device or process even by one who discovers it properly through independent research. The patent monopoly is a reward to the inventor. But such is not the case with a trade secret. Its protection is not based on a policy of rewarding or otherwise encouraging the development of secret processes or devices. The protection is merely against breach of faith and reprehensible means of learning another's secret. For this limited protection it is not appropriate to require also the kind of novelty and invention which is a requisite of patentability. The nature of the secret is, however, an important factor in determining the kind of relief that is appropriate against one who is subject to liability under the rule stated in this section. Thus, if the secret consists of a device or process which is a novel invention, one who acquires the secret wrongfully is ordinarily enjoined from further use of it and is required to account for the profits derived from his past use. If, on the other hand, the secret consists of mechanical improvements that a good mechanic can make without resort to the secret, the wrongdoer's liability may be limited to damages, and an injunction against future use of the improvements made with the aid of the secret may be inappropriate.

APPENDIX E TO °1910.1200(ADVISORY)-GUIDELINES FOR EMPLOYER COMPLIANCE

The Hazard Communication Standard (HCS) is based on a simple concept-that employees have both a need and a right to know the hazards and identities of the chemicals they are exposed to when working. They also need to know what protective measures are available to prevent adverse effects from occurring. The HCS is designed to provide employees with the information they need.

Knowledge acquired under the HCS will help employers provide safer workplaces for their employees. When employers have information about the chemicals being used, they can take steps to reduce exposures, substitute less hazardous materials, and establish proper work practices. These efforts will help prevent the occurrence of work-related illnesses and injuries caused by chemicals.

The HCS addresses the issues of evaluating and communicating hazards to workers. Evaluation of chemical hazards involves a number of technical concepts, and is a process that requires the professional judgement of experienced experts. That's why the HCS is designed so that employers who simply use chemicals, rather than produce or import them, are not required to evaluate the hazards of those chemicals. Hazard determination is the

responsibility of the producers and importers of the materials. Producers and importers of chemicals are then required to provide the hazard information to employers that purchase their products.

Employers that don't produce or import chemicals need only focus on those parts of the rule that deal with establishing a workplace program and communicating information to their workers. This appendix is a general guide for such employers to help them determine what's required under the rule. It does not supplant or substitute for the regulatory provisions, but rather provides a simplified outline of the steps an average employer would follow to meet those requirements.

1. Becoming Familiar With The Rule.

OSHA has provided a simple summary of the HCS in a pamphlet entitled "Chemical Hazard Communication," OSHA Publication Number 3084. Some employers prefer to begin to become familiar with the rule's requirements by reading this pamphlet. A copy may be obtained from your local OSHA Area Office, or by contacting the OSHA Publications Office at (202) 523-9667.

The standard is long, and some parts of it are technical, but the basic concepts are simple. In fact, the requirements reflect what many employers have been doing for years. You may find that you are already largely in compliance with many of the provisions, and will simply have to modify your existing programs somewhat. If you are operating in an OSHA-approved State Plan State, you must comply with the State's requirements, which may be different than those of the Federal rule. Many of the State Plan States had hazard communication or "right-to-know" laws prior to promulgation of the Federal rule. Employers in State Plan States should contact their State OSHA offices for more information regarding applicable requirements.

The HCS requires information to be prepared and transmitted regarding all hazardous chemicals. The HCS covers both physical hazards (such as flammability), and health hazards (such as irritation, lung damage, and cancer). Most chemicals used in the workplace have some hazard potential, and thus will be covered by the rule.

One difference between this rule and many others adopted by OSHA is that this one is performance-oriented. That means that you have the flexibiliy to adapt the rule to the needs of your workplace, rather than having to follow specific, rigid

requirements. It also means that you have to exercise more judgement to implement an appropriate and effective program.

The standard's design is simple. Chemical manufacturers and importers must evaluate the hazards of the chemicals they produce or import. Using that information, they must then prepare labels for containers, and more detailed technical bulletins called material safety data sheets (MSDS).

Chemical manufacturers, importers, and distributors of hazardous chemicals are all required to provide the appropriate labels and material safety data sheets to the employers to which they ship the chemicals. The information is to be provided automatically. Every container of hazardous chemicals you receive must be labeled, tagged, or marked with the required information. Your suppliers must also send you a properly completed material safety data sheet (MSDS) at the time of the first shipment of the chemical, and with the next shipment after the MSDS is updated with the new and significant information about the hazards.

You can rely on the information received from your suppliers. You have no independent duty to analyze the chemical or evaluate the hazards of it.

Employers that "use" hazardous chemicals must have a program to ensure the information is provided to exposed employees. "Use" means to package, handle, react, or transfer. This is an intentionally broad scope, and includes any situation where a chemical is present in such a way that employees may be exposed under normal conditions of use or in a foreseeable emergency.

The requirements of the rule that deal specifically with the hazard communication program are found in this section in paragraphs (e), written hazard communication program; (f), labels and other forms of warning; (g), material safety data sheets; and (h), employee information and training. The requirements of these paragraphs should be the focus of your attention. Concentrate on becoming familiar with them, using paragraphs (b), scope and application, and (c), definitions, as references when needed to help explain the provisions.

There are two types of work operations where the coverage of the rule is limited. These are laboratories and operations where chemicals are only handled in sealed containers (e.g., a warehouse). The limited provisions for these workplaces can be found in paragraph (b) of this section, scope and application.

Basically, employers having these types of work operations need only keep labels on containers as they are received; maintain material safety data sheets that are received, and give employees access to them; and provide information and training for employees. Employers do not have to have written hazard communication programs and lists of chemicals for these types of operations.

The limited coverage of laboratories and sealed container operations addresses the obligation of an employer to the workers in the operations involved, and does not affect the employer's duties as a distributor of chemicals. For example, a distributor may have warehouse operations where employees would be protected under the limited sealed container provisions. In this situation, requirements for obtaining and maintaining MSDSs are limited to providing access to those received with containers while the substance is in the workplace, and requesting MSDSs when employees request access for those not received with the containers. However, as a distributor of hazardous chemicals, that employer will still have responsibilities for providing MSDSs to downstream customers at the time of the first shipment and when the MSDS is updated. Therefore, although they may not be required for the employees in the work operation, the distributor may, nevertheless, have to have MSDSs to satisfy other requirements of the rule.

2. Identify Responsible Staff

Hazard communication is going to be a continuing program in your facility. Compliance with the HCS is not a "one shot deal." In order to have a successful program, it will be necessary to assign responsibility for both the initial and ongoing activities that have to be undertaken to comply with the rule. In some cases, these activities may already be part of current job assignments. For example, site supervisors are frequently responsible for on-the-job training sessions. Early identification of the responsible employees, and involvement of them in development of your plan of action, will result in a more effective program design. Evaluation of the effectiveness of your program will also be enhanced by involvement of affected employees.

For any safety and health program. success depends on commitment at every level of the organization. This is particularly true for hazard communication, where success requires a change in behavior. This will only occur if employers understand the

program, and are committed to its success, and if employees are motivated by the people presenting the information to them.

3. Identify Hazardous Chemicals in the Workplace

The standard requires a list of hazardous chemicals in the workplace as part of the written hazard communication program. The list will eventually serve as an inventory of everything for which an MSDS must be maintained. At this point, however, preparing the list will help you complete the rest of the program since it will give you some idea of the scope of the program required for compliance in your facility.
The best way to prepare a comprehensive list is to survey the workplace. Purchasing records may also help, and certainly employers should establish procedures to ensure that in the future purchasing procedures result in MSDSs being received before a material is used in the workplace.

The broadest possible perspective should be taken when doing the survey. Sometimes people think of "chemicals" as being only liquids in containers. The HCS covers chemicals in all physical forms liquids, solids, gases, vapors, fumes, and mists whether they are "contained" or not. The hazardous nature of the chemical and the potential for exposure are the factors which determine whether a chemical is covered. If it's not hazardous, it's not covered. If there is no potential for exposure (e.g., the chemical is inextricably bound and cannot be released), the rule does not cover the chemical.
Look around. Identify chemicals in containers, including pipes, but also think about chemicals generated in the work operations. For example, welding fumes, dusts, and exhaust fumes are all sources of chemical exposures. Read labels provided by suppliers for hazard information. Make a list of all chemicals in the workplace that are potentially hazardous For your own information and planning, you may also want to note on the list the location(s) of the products within the workplace, and an indication of the hazards as found on the label. this will help you as you prepare the rest of your program.
Paragraph (b) of this section, scope and application, includes exemptions for various chemicals or workplace situations. After compiling the complete list of chemicals, you should review paragraph (b) of this section to determine if any of the items can be eliminated from the list because they are exempted materials. For example, food, drugs, and cosmetics brought into the workplace for employee consumption are exempt. So rubbing alcohol in the first aid kit would not be covered.

Once you have compiled as complete a list as possible of the potentially hazardous chemicals in the workplace, the next step is to determine if you have received material safety data sheets for all of them. Check you files against the inventory you have just compiled. If any are missing, contact your supplier and request one. It is a good idea to document these requests, either by copy of a letter or a note regarding telephone conversations. If you have MSDSs for chemicals that are not on you list, figure out why. Maybe you don't use the chemical anymore. Or maybe you missed it in your survey. Some suppliers do provide MSDSs for products that are not hazardous. These do not have to be maintained by you.

You should not allow employees to use any chemicals for which you have not received an MSDS. The MSDS provides information you need to ensure proper protective measures are implemented prior to exposure.

4. Preparing and Implementing a Hazard Communication Program
All workplaces where employees are exposed to hazardous chemicals must have a written plan which describes how the standard will be implemented in that facility. Preparation of a plan is not just a paper exercise all of the elements must be implemented in the workplace in order to be in compliance with the rule. See paragraph (e) of this section for the specific requirements regarding written hazard communication programs. The only work operations which do not have to comply with the written plan requirements are laboratories and work operations where employees only handle chemicals in sealed containers. See paragraph (b) of this section, scope and application, for the specific requirements for these two types of workplaces.
The plan does not have to be lengthy or complicated. It is intended to be a blueprint for implementation of your program-an assurance that all aspects of the requirements have been addressed.

Many trade associations and other professional groups have provided sample programs and other assistance materials to affected employers. These have been very helpful to many employers since they tend to be tailored to the particular industry involved. You may wish to investigate whether your industry trade groups have developed such materials.

Although such general guidance may be helpful, you must remember that the written program has to reflect what you are doing in your workplace. Therefore, if you use a generic program it must

be adapted to address the facility it covers. For example, the written plan must list the chemicals present at the site, indicate who is to be responsible for the various aspects of the program in your facility, and indicate where written materials will be made available to employees.

If OSHA inspects your workplace for compliance with the HCS, the OSHA compliance officer will ask to see your written plan at the outset of the inspection. In general, the following items will be considered in evaluating your program.

The written program must describe how the requirements for labels and other forms of warning, material safety data sheets, and employee information and training are going to be met in your facility. The following discussion provides the type of information compliance officers will be looking for to decide whether these elements of the hazard communication program have been properly addressed:

A. Labels and Other Forms of Warning

In-plant containers of hazardous chemicals must be labeled, tagged, or marked with the identity of the material and appropriate hazard warnings. Chemical manufacturers, importers, and distributors are required to ensure that every container of hazardous chemicals they ship is appropriately labeled with such information and with the name and address of the producer or other responsible party. Employers purchasing chemicals can rely on the labels provided by their suppliers. If the material is subsequently transferred by the employer from a labeled container to another container, the employer will have to label that container unless it is subject to the portable container exemption. See paragraph (f) of this section for specific labeling requirements.

The primary information to be obtained from an OSHA-required label is an identity for the material, and appropriate hazard warnings. The identity is any term which appears on the label, the MSDS, and the list of chemicals, and thus links these three sources of information. The identity used by the supplier may be a common or trade name ("Black Magic Formula"), or a chemical name (1,1,1,-trichloroethane). The hazard warning is a brief statement of the hazardous effects of the chemical ("flammable," "causes lung damage"). Labels frequently contain other information, such as precautionary measures ("do not use near open flame"), but this information is provided voluntarily and is

not required by the rule. Labels must be legible, and prominently displayed. There are no specific requirements for size or color, or any specified text.

With these requirements in mind, the compliance officer will be looking for the following types of information to ensure that labeling will be properly implemented in your facility:

1. Designation of person(s) responsible for ensuring labeling of in-plant containers;

2. Designation of person(s) responsible for ensuring labeling of any shipped containers;

3. Description of labeling system(s) used;

4. Description of written alternatives to labeling of in-plant containers (if used); and,

5. Procedures to review and update label information when necessary.

Employers that are purchasing and using hazardous chemicals-rather than producing or distributing them will primarily be concerned with ensuring that every purchased container is labeled. If materials are transferred into other containers, the employer must ensure that these are labeled as well, unless they fall under the portable container exemption (paragraph (f)(7) of this section). In terms of labeling systems, you can simply choose to use the labels provided by your suppliers on the containers. These will generally be verbal text labels, and do not usually include numerical rating systems or symbols that require special training. The most important thing to remember is that this is a continuing duty all in-plant containers of hazardous chemicals must always be labeled. Therefore, it is important to designate someone to be responsible for ensuring that the labels are maintained as required on the containers in your facility, and that newly purchased materials are checked for labels prior to use.

B. Material Safety Data Sheets

Chemical manufacturers and importers are required to obtain or develop a material safety data sheet for each hazardous chemical they produce or import. Distributors are responsible for ensuring that their customers are provided a copy of these MSDSs.

Employers must have an MSDS for each hazardous chemical which they use. Employers may rely on the information received from their suppliers. The specific requirements for material safety data sheets are in paragraph (g) of this section.

There is no specified format for the MSDS under the rule, although there are specific information requirements. OSHA has developed a non-mandatory format, OSHA Form 174, which may be used by chemical manufacturers and importers to comply with the rule. The MSDS must be in English. You are entitled to receive from your supplier a data sheet which includes all of the information required under the rule. If you do not receive one automatically, you should request one. If you receive one that is obviously inadequate, with, for example, blank spaces that are not completed, you should request an appropriately completed one. If your request for a data sheet or for a corrected data sheet does not produce the information needed, you should contact your local OSHA Area Office for assistance in obtaining the MSDS. The role of MSDSs under the rule is to provide detailed information on each hazardous chemical, including its potential hazardous effects, its physical and chemical characteristics, and recommendations for appropriate protective measures. This information should be useful to you as the employer responsible for designing protective programs, as well as to the workers. If you are not familiar with material safety data sheets and with chemical terminology, you may need to learn to use them yourself. A glossary of MSDS terms may be helpful in this regard. Generally speaking, most employer using hazardous chemicals will primarily be concerned with MSDS information regarding hazardous effects and recommended protective measures. Focus on the sections of the MSDS that are applicable to your situation.

MSDSs must be readily accessible to employees when they are in their work areas during their work shifts. This may be accomplished in many different ways. You must decide what is appropriate for your particular workplace. Some employers keep the MSDSs in a binder in a central location (e.g., in the pick-up truck on a construction site). Others, particularly in workplaces with large numbers of chemicals, computerize the information and provide access through terminals. As long as employees can get the information when they need it, any approach may be used. The employees must have access to the MSDSs themselves-simply having a system where the information can be read to them over the phone is only permitted under the mobile worksite provision, paragraph (g)(9) of this section, when employees must travel between workplaces during a shift. In this situation, they have access to

the MSDSs prior to leaving the primary worksite, and when they return, so the telephone system is simply an emergency arrangement.

In order to ensure that you have a current MSDS for each chemical in the plant as required, and that employee access is provided, the compliance officers will be looking for the following types of information in your written program:

1. Designation of person(s) responsible for obtaining and maintaining the MSDSs;

2. How such sheets are to be maintained in the workplace (e.g., in notebooks in the work area(s) or in a computer with terminal access), and how employees can obtain access to them when they are in their work area during the work shift;

3. Procedures to follow when the MSDS is not received at the time of the first shipment;

4. For producers, procedures to update the MSDS when new and significant health information is found; and,

5. Description of alternatives to actual data sheets in the workplace, if used.

For employers using hazardous chemicals, the most important aspect of the written program in terms of MSDSs is to ensure that someone is responsible for obtaining and maintaining the MSDSs for every hazardous chemical in the workplace. The list of hazardous chemicals required to be maintained as part of the written program will serve as an inventory. As new chemicals are purchased, the list should be updated. Many companies have found it convenient to include on their purchase orders the name and address of the person designated in their company to receive MSDSs.

C. Employee Information and Training

Each employee who may be "exposed" to hazardous chemicals when working must be provided information and trained prior to initial assignment to work with a hazardous chemical, and whenever the hazard changes. "Exposure" or "exposed" under the rule means that "an employee is subjected to a hazardous chemical in the course of employment through any route of entry (inhalation, ingestion, skin contact or absorption, etc.) and includes potential (e.g.,

accidental or possible) exposure." See paragraph (h) of this section for specific requirements. Information and training may be done either by individual chemical, or by categories of hazards (such as flammability or carcinogenicity). If there are only a few chemicals in the workplace, then you may want to discuss each one individually. Where there are large numbers of chemicals, or the chemicals change frequently, you will probably want to train generally based on the hazard categories (e.g., flammable liquids, corrosive materials, carcinogens). Employees will have access to the substance-specific information on the labels and MSDSs.

Information and training is a critical part of the hazard communication program. Information regarding hazards and protective measures are provided to workers through written labels and material safety data sheets. However, through effective information and training, workers will learn to read and understand such information, determine how it can be obtained and used in their own workplaces, and understand the risks of exposure to the chemicals in their workplaces as well as the ways to protect themselves. A properly conducted training program will ensure comprehension and understanding. It is not sufficient to either just read material to the workers, or simply hand them material to read. You want to create a climate where workers feel free to ask questions. This will help you to ensure that the information is understood. You must always remember that the underlying purpose of the HCS is to reduce the incidence of chemical source illnesses and injuries. This will be accomplished by modifying behavior through the provision of hazard information and information about protective measures. If your program works, you and your workers will better understand the chemical hazards within the workplace. The procedures you establish regarding, for example, purchasing, storage, and handling of these chemicals will improve, and thereby reduce the risks posed to employees exposed to the chemical hazards involved. Furthermore, your workers' comprehension will also be increased, and proper work practices will be followed in your workplace.

If you are going to do the training yourself, you will have to understand the material and be prepared to motivate the workers to learn. This is not always an easy task, but the benefits are worth the effort. More information regarding appropriate training can be found in OSHA Publication No. 2254 which contains voluntary training guidelines prepared by OSHA's Training Institute. A copy of this document is available from OSHA's Publications Office at (202) 219-4667.

In reviewing your written program with regard to information and training, the following items need to be considered:

1. Designation of person(s) responsible for conducting training;
2. Format of the program to be used (audiovisuals, classroom instruction, etc.);

3. Elements of the training program (should be consistent with the elements in paragraph (h) of this section); and,

4. Procedure to train new employees at the time of their initial assignment to work with a hazardous chemical, and to train employees when a new hazard is introduced into the workplace.

The written program should provide enough details about the employer's plans in this area to assess whether or not a good faith effort is being made to train employees. OSHA does not expect that every worker will be able to recite all of the information about each chemical in the workplace. In general, the most important aspects of training under the HCS are to ensure that employees are aware that they are exposed to hazardous chemicals, that they know how to read and use labels and material safety data sheets, and that, as a consequence of learning this information, they are following the appropriate protective measures established by the employer. OSHA compliance officers will be talking to employees to determine if they have received training, if they know they are exposed to hazardous chemicals, and if they know where to obtain substance-specific information on labels and MSDSs.

The rule does not require employers to maintain records of employee training, but many employers choose to do so. This may help you monitor your own program to ensure that all employees are appropriately trained. If you already have a training program, you may simply have to supplement it with whatever additional information is required under the HCS. For example, construction employers that are already in compliance with the construction training standard (29 CFR 1926.21) will have little extra training to do.

An employer can provide employees information and training through whatever means are found appropriate and protective. Although there would always have to be some training on-site (such as informing employees of the location and availability of the written program and MSDSs), employee training may be satisfied in part by general training about the requirements of

the HCS and about chemical hazards on the job which is provided by, for example, trade associations, unions, colleges, and professional schools. In addition, previous training, education and experience of a worker may relieve the employer of some of the burdens of informing and training that worker. Regardless of the method relied upon, however, the employer is always ultimately responsible for ensuring that employees are adequately trained. If the compliance officer finds that the training is deficient, the employer will be cited for the deficiency regardless of who actually provided the training on behalf of the employer.

D. Other Requirements

In addition to these specific items, compliance officers will also be asking the following questions in assessing the adequacy of the program:

Does a list of the hazardous chemicals exist in each work area or at a central location?

Are methods the employer will use to inform employees of the hazards of non-routine tasks outlined?

Are employees informed of the hazards associated with chemicals contained in unlabeled pipes in their work areas?

On multi-employer worksites, has the employer provided other employers with information about labeling systems and precautionary measures where the other employers have employees exposed to the initial employer's chemicals?

Is the written program made available to employees and their designated representatives?

If your program adequately addresses the means of communicating information to employees in your workplace, and provides answers to the basic questions outlined above, it will be found to be in compliance with the rule.

5. Checklist for Compliance

The following checklist will help to ensure you are in compliance with the rule:

Obtained a copy of the rule.

Read and understood the requirements.

Assigned responsibility for tasks.

Prepared an inventory of chemicals.

Ensured containers are labeled.

Obtained MSDS for each chemical.

Prepared written program.

Made MSDSs available to workers.

Conducted training of workers.

Established procedures to maintain current program.

Established procedures to evaluate effectiveness.

6. Further Assistance

If you have a question regarding compliance with the HCS, you should contact your local OSHA Area Office for assistance. In addition, each OSHA Regional Office has a Hazard Communication Coordinator who can answer your questions. Free consultation services are also available to assist employers, and information regarding these services can be obtained through the Area and Regional offices as well.

The telephone number for the OSHA office closest to you should be listed in your local telephone directory. If you are not able to obtain this information, you may contact OSHA's Office of Information and Consumer Affairs at (202) 219-8151 for further assistance in identifying the appropriate contacts.

Appendix B

Reserved for later additions

Appendix C

The OSHA Bulletin Board

1. The Occupational Safety and Health Administration (OSHA) requires that certain information be posted in a common area of each work place(eg. clinic). The information should be posted in a single area.

2. The items that will be posted include:

a. Evacuation Plan (including diagram)

b. OSHA Poster: "Job Safety & Health Protection" (OSHA 2203) or facsimile

c. DOD Poster: "Department of Defense Occupational Safety and Health Protection Program" (DD Form 2272, or facsimile.)

d. OSHA form number 200, Log and Summary of Occupational Injuries and Illnesses, or equivalent document. (This will be posted for 30 days annually, beginning 30 days following the end of the previous calendar year (i.e., it must be posted annually on January 30th, and remain up until the first of March).

e. Army Regulation 385-40, Paragraph 3-5 also directs injury reporting and logging for DA facilities.

f. Location of first aid equipment

3. Each Clinic HAZCOM/Safety Officer/NCO should copy the enclosed form, fill it out, and post it on the OSHA Bulletin Board. This information form should be reviewed periodically and updated as appropriate.

a. Dental Clinic Information Sheet (see Appendix C.1)

b. Worksheet for Hazardous Chemical Injuries (see Appendix H)

Appendix C.1
OCCUPATIONAL SAFETY & HEALTH INFORMATION

Facility Name:_____ Bldg No:_____

Location:_____ Telephone _____
Your Clinic HAZCOM/Safety Officer/NCO oversees the implementation of the OSHA Hazard Communication Standard. You are encouraged to ask questions or voice concerns to this officer whenever you feel it is appropriate.

HAZCOM/Safety Officer/NCO: _____

This facility is required to have a written copy of the U.S. Army Dental Unit Hazard Communication Program, an inventory of all chemical products used in this facility, and a file of Material Safety Data Sheets (MSDSs) for all chemical products used in this facility. These are located so that you can use them during your work hours. These items provide you with more information, including your rights and responsibilities, than is posted in and along with this statement.

Location of information:_____

Location of first aid kit(s):_____

ACCIDENTS:
REPORT ALL ACCIDENTS IMMEDIATELY TO YOUR SUPERVISOR
(as well as all occupationally related illness and injury)

Supervisor:_____

Alternate:_____

Your supervisor has all the required forms to fill out and can assist you in doing so. You will be assisted or directed to the appropriate medical facility.

IMPORTANT TELEPHONE NUMBERS

AMBULANCE ....._____

Emergency Room ....._____

Fire....._____

Occupational Health, Preventive Medicine...._____

Environmental Health, Preventive Medicine..._____

Appendix D
HAZARDOUS CHEMICAL INVENTORY FORMAT

1. FORMAT OF THE INVENTORY

TITLE: The title of the inventory will include the name of the respective workplace to which that inventory applies, i.e., the name of the dental clinic, e.g., Dental Clinic #5 Hazardous Chemical Inventory, and will include the date identifying when the inventory was last revised as a result of a new inventory inspection and/or as an update after newly acquired or deleted products were annotated on it, e.g., "Last Revision: 13 SEP 92".

IDENTITY: This is the first column of information. It lists the various chemical agents found in the clinic by product name (a.k.a., trade name, common name, or commercial name). The product name listed should be exactly the same as the name on the product's original container and on its MSDS. This ensures accurate cross-referencing. All secondary container labeling must use this name.

MANUFACTURER: The names of the manufacturer (or importer or distributor, if the case) of each product is listed in the second column. Addresses are not included, as these will always be on the corresponding MSDS.

MSDS DATE: This column lists the dates when the MSDS was prepared for each of the products listed. If the MSDS also lists a revision date, then this is the date that will be listed. (Since MSDSs are frequently included in supply orders, the MSDS preparation [or revision] dates of these new arrivals must be checked against the dates of the ones already on file. If the dates differ between the old and the new, the MSDS with the most recent date will be filed, with the inventory appropriately updated [annotated] as well.) If neither the preparation date nor the revision date are listed on the MSDS, then the "date printed" will be used. If that date is absent, then the "effective date" will be used. The most recent and best date will be used, with no blank entries permitted.

CLINICS: This column should indicate which clinics use the material referenced by the MSDS. This is applicable only to multi-clinic

Dental Units.

MSDS: This column indicates the "on hand" status of an MSDS to its corresponding chemical product within your clinic. No blank entries are permitted in this column. Entries will be either:

Yes (Y) - The corresponding MSDS is on file.

No (N) - The corresponding MSDS is not on file. In this case, the HAZCOM/Safety Officer/NCO will pencil in adjacent to thisentry the date when the MSDS was requested, e.g., "Requested 17 AUG 92." Upon receipt and filing of the MSDS, this note will be erased and the inventory will be updated by printing "Yes" in ink on that line.

NH - The manufacturer has provided a written statement other than an MSDS stating that the chemical product is non-hazardous.

FDA - The manufacturer has provided a written statement other than an MSDS stating that the chemical product does not fall under OSHA regulation but rather under the jurisdiction of the FDA.

2. Each Clinic HAZCOM/Safety Officer/NCO will ensure that their clinic's inventory is current and accurately maintained. New chemical products ordered and received require listing. In turn, correspondingly new or revised material safety data sheets will also require annotation on the inventory. Periodically, clinic inventories will be inspected as part of overall monitoring of the Dental Unit Hazard Communication Program as well as to update the Dental Unit master inventory.

3. This data is the minimum information that should be available on the master chemical inventory.

Appendix E
CONTAINER HAZARD WARNING LABELING SYSTEM

1. Original containers are those labeled containers that contain the material as packaged and shipped by the manufacturer. A second label need not be affixed to an original container with a proper label that conveys the required information. Original labels may not be defaced or removed. If a new label is required, DD Form 2521/2522 or a facsimile/substitute with the information required by 29 CFR 1910.1200 must be used.

2. Portable containers:

a. These are containers filled from a properly labeled container by an employee who uses the material immediately (one work shift). This container may not be passed on to another employee or work shift under any circumstances. This material must be used, returned to the original container, or disposed of in the proper manner. These portable containers are exempt from labeling requirements.

b. Examples of portable containers:

dappen dish plaster bowl beakers
glassware porcelain staining palette

3. Secondary Containers.

a. Secondary containers are those containers used for storage of materials removed from the original container. Plastic bottles are our most common type of secondary containers. There are several other types of secondary containers that we need to be aware of. Some examples of these and examples of some of the chemicals that might be stored in them are:

- plastic bags (stone, acrylic polymer, etc.)
- the ultrasonic cleaning machine (the cleaning solution used)
- amalgam capsule container (if not the original container)
- stainless steel containers (chemical contents)
- other containers (disinfectant, etc.)
- bins that hold hazardous materials

b. All secondary containers, without exception, need to be adequately labeled. Containers too small to label or containers that preclude labeling may need to use "area or batch labeling" or have a tag type label made to be attached to the container.

(1) Area or batch labeling is used to label things that are always used in the same place or area. An example would be labeling placed on the wall above an ultrasonic cleaner to keep the label from getting soaked from the solution in the machine. Another example would be labeling a drawer where a small container is always kept.

(2) If a tag is made for an item, consider laminating the tag to increase its life expectancy.

c. One of the greatest problems of using secondary containers is that they tend to look like other containers we use. It is often easy to grab the wrong container if special care isn't taken. To minimize errors in the use of chemical products transferred to secondary containers, the following guidelines should be observed:

(1) All secondary containers should be purchased new for specific use as secondary containers.

(2) When an old original container is "recycled" for use as a secondary container, the old (original) label will be completely removed from that container.

(3) Some containers have the product name impressed into the container itself, such a those of consumer commercial products (e.g., "409®"). This type of container is absolutely not suitable. DO NOT USE IT.

(4) Containers originally used for medical items or pharmaceutical items may not be used as portable or secondary chemical containers. These containers can be confused with the original container due to the shape and color of the container. An example is placing sodium hypochlorite solutions in saline water containers. Even with new labels this is a dangerous practice and will not be allowed in U.S. Army Dental Facilities.

4. Labeling Secondary Containers.

a. Remove any old labels from the container if the existing container's label is not appropriate for the chemical product.

b. A facsimile of the original container label, a DD Form 2521/DD Form 2522 (Hazardous Chemical Warning Label), or a facsimile/substitute label with the information required by 29 CFR 1910.1200 (this may be as simple as the material name and associated hazard to more complex systems of information presentation--see 29 CFR 1910.1200 paragraph f) is the only acceptable secondary label to be used in U.S. Army Dental Care Facilities. They may be reduced in size as long as the data on the label is still readable. Color reproduction is not required. It is essential that employees know what the information on the label is to be used for. For example, in a simple system that uses only the common material name, the employee would need to be briefed that the label is there to refer the employee to the appropriate MSDS for further information. More complex labeling systems may be used in a different manner. Whatever label information display is chosen, the most important aspect is that the employee realizes what the label means.

c. Alternative labeling. If a label will be purposely removed and replaced elsewhere periodically, use a plastic sheet on both sides of the label. This gives you an entirely laminated label that can be temporarily attached with clear tape, a rubber band, or possibly with a clip or string.

5. The mechanics of adding new labels to the system are:

a. Determine the need for a new label. This will occur when a new product is received and requires dispensing into a secondary container for use. The need for a new label must be brought to the attention of clinic supply personnel so a new label can be fabricated.

b. Reduction of the DD Form 2522 by 50% makes an easily read label of reasonable size, further reduction is possible if the information is still readable.

c. Any time fabrication of a new label (one not used before) is accomplished, the chemical inventory and MSDS file should be checked to make sure the proper name of the item and appropriate warnings (if any are used) are present.

d. The manufacturing data need not be reproduced on the secondary label unless the item will be shipped.

6. All secondary container labels will:

a. Be in plain English.

b. Have currently accurate information; must be cross-referenced with respective MSDSs and listing on the Chemical Inventory.

c. Contain:

(1) the identity of the material, exactly matching the product name (trade name, common name, commercial name) used on both the respective MSDS and Chemical Hazard Inventory listing.

(2) All appropriate hazard warnings (See 29 CFR 1910.1200 Para(f)(5)(f)(i-ii).

d. Be placed on a chemical container so as to not obscure any other warnings, instructions, or product information already on the container.

Appendix F

Reserved for later additions

Appendix G

Reserved for later additions

Appendix H

CHEMICAL INJURY PROCEDURES

1. PURPOSE. This policy provides guidance to clinic personnel, supervisors and OIC/NCOICs concerning actions to be taken in the event excessive or inappropriate exposure to a hazardous chemical agent that results, or that may result, in a physical injury or compromised well-being of an employee as a result of that exposure.

2. SCOPE. Any person who sustains an on-the-job chemical injury, or who is excessively or inappropriately exposed to a hazardous chemical agent.

3. KEY CONSIDERATIONS

a. Always assume the causative chemical agent is hazardous. Always initiate basic first aid procedures immediately.

b. Chemical injuries can be chronic in nature as well as acute. They could develop slowly over a period of many months or years, or could occur within seconds. Furthermore, the effects of an acute exposure may not become evident immediately; always seek medical attention without delay.

c. Routes of entry include inhalation, ingestion and/or absorption via skin and eyes, and can affect several body organs.

4. PROCEDURE. Employees with suspected chronic injuries should be referred to Occupational Health Specialists with all appropriate forms completed.

a. The following information will be provided during any medical examination or consultation:

(1) The identity of the hazardous chemical to which the employee was exposed (or suspected of being exposed) to. This includes a copy of that chemical's material safety data sheet (MSDS).

(2) Description of the conditions under which the

exposure occurred, including quantity.

(3) Description of injuries, signs and symptoms of exposure that the employee is experiencing.

b. Medical consultation will be provided whenever an abnormal event such as a chemical exposure, extensive spill, leak or explosion takes place in the facility. Its purpose will be to determine whether subsequent medical examination is necessary.

(1) Accident reports will be maintained by the clinics, and are mandatory. A written memorandum will be submitted to the Clinic HAZCOM/Safety Officer/NCO.

(2) Occupational Health, Dept. of Preventive Medicine, will be consulted immediately as to the need for followup.

c. For medical examinations and consultations required under paragraph c, the examining health professional will provide a written opinion which includes the following:

(1) Any recommendations for further medical followup.

(2) Results of medical examination and diagnostic tests.

(3) Any medical condition which may be revealed in the course of the examination that places the employee at increased risk as a result of exposure to a hazardous chemical found in the workplace.

(4) A statement that the employee has been informed by the examining health professional of the results of the medical examination or consultation and any medical condition that may require further examination.

d. Pregnancy Surveillance. The pregnancy surveillance program will meet the requirements found in AR 40-5.

(1) Female employees of child-bearing age will be informed about reproductive hazards in the workplace. The pregnant employee and her unborn child will not be endangered by the work assignment.

(2) Pregnant employees will notify their supervisor as soon as a pregnancy is known. The supervisor will notify Occupational Health in writing. If, after consulting her physician, the employee requests a change in her work assignment, every reasonable effort will be made to accommodate her request.

(3) The supervisor may request medical certification as to the nature of the limitations recommended by her physician.

e. EMERGENCY CARE. Injuries are to be referred to appropriate medical personnel at the time of the injury. The injured individual should be escorted or transported as deemed appropriate. THE (MSDS) OR THE INJURIOUS CHEMICAL AGENT MUST ACCOMPANY THE EMPLOYEE! REFER TO THE CHEMICAL CONTAINER'S LABEL FOR ACCURATE IDENTIFICATION.

DENCOM PAM 385-1-1(Appendix H)

WORKSHEET FOR HAZARDOUS CHEMICAL INJURIES

INJURED EMPLOYEE:_____ SSN:_____

CLINIC:_____ DATE OF INJURY:_____ TIME:_____

NAME OF INJURIOUS CHEMICAL
PRODUCT:_____

NAME OF CHEMICAL
MANUFACTURER:_____

```
* * * * * * * * * * * * * * *
*                 *
*      YOU  MUST      *
*                 *
*    ATTACH MSDS      *
*                 *
* * * * * * * * * * * * * * *
```

ROUTE OF ENTRY: ___ EYES ___ SKIN ___ INHALATION ___ INGESTION

CIRCUMSTANCES OF INJURY/EXPOSURE: _____

_____

_____

_____

FIRST AID PROCEDURES PROVIDED: _____

_____

_____

THE FORMS BELOW MAY DIFFER AT SPECIFIC ORGANIZATIONS

MILITARY PERSONNEL: Report to Occupational Health with this form, medical record, and the appropriate MSDS

CIVILIAN PERSONNEL: Report to Occupational Health with this form, CA-1 (Notice of Traumatic Injury), CA-16 (Request for Examination and/or Treatment), and the appropriate MSDS

Appendix I

STORAGE COMPATIBILITY

1. The proper storage of different chemicals is important because the accidental mixture of chemicals that are incompatible is dangerous. If a container of a chemical should happen to break, leak or spill over, the contents may contact a container made of an incompatible material (e.g., aluminum) or perhaps accidentally mix with the contents of another container that also had a mishap. If the chemicals were stored properly according to compatibility characteristics, it is likely that the hazard potential would be relatively low. If the chemicals were incompatible, that is, when mixed they would likely cause some type of physical hazard (fire, explosion) or toxic byproduct (toxic fumes), then the hazard potential would be greater.

2. Incompatible chemicals should be stored in separate cabinets. When this is not possible, these chemicals should be stored in such a way that they are physically separated. Placing containers on different shelves within a cabinet, and further placing containers of liquids in plastic tubs or bins, is a good method to use.

3. There is not a single coding system for identifying compatibility characteristics of chemicals that is universally used. Manufacturers do not provide a compatibility code on their MSDSs. Incompatible materials are listed in the reactivity section of the MSDS, but this information has somewhat limited meaning because nowhere is the basic chemical characteristic of the chemical in question provided. For example, the "Incompatibility" section may list specific chemicals to avoid, and usually the incompatibilities are simply listed as "strong oxidizers and acids," or "strong alkalis or acids."

4. There are sources for determining the compatibility/ incompatibility characteristics of single compounds. Determining the characteristics of mixtures of two or more compounds, as commonly encountered in most of our dental products, is not so easy. Below are some of the more commonly used materials in our clinics, especially in the lab. These few examples were selected because they often come in relatively large (bulk) containers that

are frequently stored and from which portions of chemicals are dispensed, ending up additionally in secondary containers. Refer to both the left and right columns.

5. Additional information can be obtained from the U.S. Army Environmental Hygiene Agency. Request a copy of "Storage Compatibility of Hazardous Materials".

CHEMICALS LISTED OPPOSITE EACH OTHER ARE INCOMPATIBLE

(The most obvious [unintentional] "incompatibilities" are those things that we need to mix together when we use them, but pose a hazard when they are accidentally mixed, as in a spill.)

Acrylic resin liquid	Acrylic resin powder
Plaster and stone (gypsum products)	Water
Dentsply Vacu-Cleaner	Water
OTHER EXAMPLES:	
Plaster and stone remover	Magnesium, aluminum (don't use aluminum containers)
Die Stone (Prevest)	Hydrofluoric acid
Petroleum distillates (wax solvent), mineral spirits (Kleenol)	Sodium hypochlorite (bleach)
Glycerine	Sodium hypochlorite (bleach)
Sodium hypochlorite (bleach)	Glycerine, Alcide Exspor and Alcide LD, heat, sunlight
Hydrofluoric acid	Alginate, gypsum investments
Mercury	Chlorine dioxide (as found in Alcide disinfectants), ammonia, aluminum
Acetone	Chloroform, hydrogen peroxide

Chloroform	Acetone, aluminum, light
Chlorine dioxide	Sodium hypochlorite (bleach) copper, aluminum
Gypsum Hardner (Whip Mix)	Aluminum
Gypsum investments	Hydrofluoric acid
Isopropyl alcohol	Heat/flame, ethylene oxide
Prevox	Most metals, strong caustics
Denatured alcohol	Heat/flame,oxidizing materials
Tray Cleaner (Coe)	Aluminum (don't use aluminum containers)

Appendix J

MANAGEMENT OF CHEMICALS.

1. Chemical Storage.

a. The quantities of chemicals stored in the operatories and supply rooms should be limited to the amounts necessary to fulfill the tasks at hand on a relative short-term basis.

(1) Containers of chemicals should not be left sitting out in work areas or on top of counters, but immediately returned to their proper storage areas after use.

(2) Containers stored on open shelves should be kept in bins, tubs or the shelves should have other restraining devices to prevent the containers from spilling. This is especially important for flammable and/or toxic chemical liquids in glass containers. The bin, tub or other secondary containment used should be large enough to hold the entire contents of any bottle of chemical kept in it if that bottle happens to break or its contents spill.

(3) Chemicals will be stored in separate cabinets according to compatibility categories listed at the end of appendix I. When this is not feasible, due to lack of enough cabinets, chemicals of differing (but not absolute) compatibilities may be stored on different shelves within a single cabinet provided secondary containment is used (e.g., plastic tub).

(4) Cabinets and the shelving within will be labeled with storage codes, compatibility categories, and specific chemical identification to ensure that no potentially hazardous errors of storage occur.

(5) Chemicals will be inspected at least semiannually to determine their condition and the condition of their containers. Outdated or excess chemicals will be turned into supply for disposition. Corroded or leaking containers will be over packed (placed in suitable secondary containment) and turned in to supply. Handling and disposition guidance should be sought from the Environmental Health section of Preventive Medicine and/or a

chemical product's material safety data sheet.

b. Flammable and Combustible Liquids

(1) Containers of flammable and combustible liquids will be stored in approved fire resistant cabinets designed in accordance with NFPA 30. Cabinets should not be located adjacent to an exit or in a stairwell. Cabinets will not be vented without approval from the Safety Office. Liquids in glass containers will be kept in a bin, tub or other secondary containment to minimize tipping and/or breakage. These secondary containers should be large enough to hold the entire contents of a glass container should it happen to break or spill.

(2) Only refrigerators designed to store flammable liquids will be used for that purpose. Domestic models (i.e., normal commercial refrigerators, as we commonly know them) are not safe, and cannot be modified to be made safe, for the storage of flammable liquids. The inevitable flammable vapors that gradually accumulate can be ignited by the door light switch or the thermostat as they switch on. All domestic refrigerators that are used to store dental products will have a sign posted on their doors stating, "DO NOT STORE FLAMMABLE LIQUIDS IN THIS REFRIGERATOR."

(3) Liquids will be stored within the same containers that the manufacturer provided with the chemicals. Only very small working quantities will be transferred to other containers for everyday use. These working secondary containers will be specifically designed for the chemical agent being used. Examples include placing denture repair liquid in the plastic dispenser made for that purpose, and placing denatured alcohol into a Hanau torch.

2. Handling Chemicals

a. Transport of Hazardous Chemicals

(1) Toxic, flammable or corrosive chemicals should be placed in a carrying bucket or other unbreakable suitable container.

(2) Wheeled carts should be used to move larger quantities of chemicals that cannot be carried by hand. Any open shelves on these carts will have a lip or other restraining device to prevent chemical containers from tipping or creeping.

(3) Chemicals may be moved between floors on passenger elevators only when no other essential passengers are on board. The elevators may be place temporarily "out of service" for this use.

(4) Compressed gas cylinders will be moved using a suitable hand truck. The gas cylinder will be strapped in place with the valve protector cap installed. Only one (1) cylinder will be moved at a time.

b. Using Chemicals

(1) Working quantities of chemicals outside of storage during an operation will be as small as practical.

(2) Containers will be closed when not in use.

(3) Containers of flammable materials will not be used or positioned near any type of flame (e.g., Bunsen gas burner, Hanau alcohol torch) or any other type of heat source.

(4) Keep work areas clean and uncluttered.

(5) Care should be taken to minimize aerosol formation when using chemical products that are sprayed onto surfaces, such as surface disinfectants. You should minimize the source-to-surface distance and avoid using a fine spray or mist that would tend to disperse in the air.

(6) Mixing and/or dispensing relatively large quantities of chemicals, potentially toxic chemicals or flammable chemicals will only be done in areas designated for those procedures. For example, the mixing and dispensing of surface disinfectants will only be done in a suitable area with adequate ventilation, running water and a sink. Acutely toxic and/or flammable chemicals will be dispensed within the confines of the laboratory fume hood with the

hood's exhaust fan on when manufacturers' information requires this type of protection.

(7) In every instance of using chemicals, appropriate personal protective equipment (PPE) must be used. This is paramount for the safe use of chemical products. Employee failure to use PPE is a violation of regulations set forth in the OSHA Hazard Communication Standard.

c. Disposing of Chemicals.

(1) All waste chemicals must be disposed of IAW federal, state , and local guidelines.

(2) Most of the chemical products used in dentistry are "used up" during their use, or as a result of their use become relatively nonhazardous (e.g., mixtures undergoing chemical reactions to produce an inert product, such as mixing acrylic resin monomer and polymer to produce the acrylic that a denture is made out of). There are chemical products that do require disposal, such as used radiographic fixer, some chemical disinfectants, and any product that is accidentally spilled. The material safety data sheet (MSDS) of any product is valuable in determining how a material should be disposed. The Environmental Health section of the Department of Preventive Medicine is another good source of disposal information. The USACHPPM has a CD-ROM/Telephone information system to answer questions concerning disposal of military items (Military Item Disposal Instructions [MIDI]). They can be contacted at: DSN 584-3651, COM 410-671-3651, FAX 584-3656, E-MAIL: midipo@aeha1.apgea.army.mil, Mailing address is:

Commander
US Army Environmental Hygiene Agency
ATTN: HSHB-ME-SH (Ms. A. Ellison)
Aberdeen Proving Grounds, MD 21010-5422

(3) All hazardous waste identified by individual departments, services, divisions, and clinics will be packaged and labeled IAW federal regulation prior to receipt by the local Logistics Divisions. The ONLY label authorized on the outside of the waste container is the hazardous waste label used at your local facility. ASSISTANCE WITH THE IDENTIFICATION, PACKAGING, AND LABELING OF HAZARDOUS WASTE CAN BE OBTAINED FROM THE ENVIRONMENTAL

HEALTH SECTION, PREVENTIVE MEDICINE SERVICE.

PLACE COPY OF THE HAZARDOUS WASTE LABEL USED AT YOUR FACILITY ON THIS PAGE

The proponent agency of this pamphlet is the Office of the Commander, United States Army Dental Command. Users are invited to send comments and suggested improvements on a DA Form 2028 (Recommended Changes To Publications And Blank Forms) to Commander, United States Army Dental Command, 2050 Worth Road, San Antonio, TX 78234-6000.

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